Chapter_6_Linear_Model_Selection_and_Regularization

April 2, 2024

```python
[3]: import numpy as np
     import pandas as pd
     from matplotlib.pyplot import subplots
     from statsmodels.api import OLS
     import sklearn.model_selection as skm
     import sklearn.linear_model as skl
     from sklearn.preprocessing import StandardScaler
     from ISLP import load_data
     from ISLP.models import ModelSpec as MS
     from functools import partial
```

```python
[5]: from sklearn.pipeline import Pipeline
     from sklearn.decomposition import PCA
     from sklearn.cross_decomposition import PLSRegression
     from ISLP.models import \
     (Stepwise,
     sklearn_selected,
     sklearn_selection_path)
     #!pip install l0bnb
     from l0bnb import fit_path
```

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Building wheels for collected packages: l0bnb
  Building wheel for l0bnb (setup.py): started
  Building wheel for l0bnb (setup.py): finished with status 'done'
  Created wheel for l0bnb: filename=l0bnb-1.0.0-py3-none-any.whl size=22325
sha256=d21f95d295daa7aeb2390d0734dc1b8bd3897acdac590187cc1e86cd6594890f
  Stored in directory: c:\users\ankit19.gupta\appdata\local\pip\cache\wheels\1f\
e8\9a\bfaa7df5841a0f3512630288d62684d075aa1674b6c5c04fb2
Successfully built l0bnb
Installing collected packages: llvmlite, numba, l0bnb
Successfully installed l0bnb-1.0.0 llvmlite-0.41.1 numba-0.58.1
```

0.1 6.5.1 Subset Selection Methods

Here we implement methods that reduce the number of parameters in a model by restricting the
model to a subset of the input variables.

0.1.1 Forward Selection

We will apply the forward-selection approach to the Hitters data. We wish to predict a baseball
player's Salary on the basis of various statistics associated with performance in the previous year.
First of all, we note that the Salary variable is missing for some of the players. The np.isnan()
function can be used to identify the missing observations. It returns an array of the same shape
as the input vector, with a True for any elements that are missing, and a False for non-missing
elements. The sum() method can then be used to count all of the missing elements

```
[8]: Hitters = load_data('Hitters')
     np.isnan(Hitters['Salary']).sum()
```

```
[8]: 59
```

We see that Salary is missing for 59 players. The dropna() method of data frames removes all of
the rows that have missing values in any variable (by default — see Hitters.dropna?).

```
[9]: Hitters.dropna?
```

Signature:

```
Hitters.dropna(
    *,
    axis: 'Axis' = 0,
    how: 'str | NoDefault' = <no_default>,
    thresh: 'int | NoDefault' = <no_default>,
    subset: 'IndexLabel' = None,
    inplace: 'bool' = False,
) -> 'DataFrame | None'
Docstring:
Remove missing values.

See the :ref:`User Guide <missing_data>` for more on which values are
considered missing, and how to work with missing data.

Parameters
----------
axis : {0 or 'index', 1 or 'columns'}, default 0
    Determine if rows or columns which contain missing values are
    removed.

    * 0, or 'index' : Drop rows which contain missing values.
    * 1, or 'columns' : Drop columns which contain missing value.

    .. versionchanged:: 1.0.0

       Pass tuple or list to drop on multiple axes.
       Only a single axis is allowed.

how : {'any', 'all'}, default 'any'
    Determine if row or column is removed from DataFrame, when we have
    at least one NA or all NA.

    * 'any' : If any NA values are present, drop that row or column.
    * 'all' : If all values are NA, drop that row or column.

thresh : int, optional
    Require that many non-NA values. Cannot be combined with how.
subset : column label or sequence of labels, optional
    Labels along other axis to consider, e.g. if you are dropping rows
    these would be a list of columns to include.
inplace : bool, default False
    Whether to modify the DataFrame rather than creating a new one.

Returns
```

```
-------
DataFrame or None
    DataFrame with NA entries dropped from it or None if ``inplace=True``.

See Also
--------
DataFrame.isna: Indicate missing values.
DataFrame.notna : Indicate existing (non-missing) values.
DataFrame.fillna : Replace missing values.
Series.dropna : Drop missing values.
Index.dropna : Drop missing indices.

Examples
--------
>>> df = pd.DataFrame({"name": ['Alfred', 'Batman', 'Catwoman'],
...                    "toy": [np.nan, 'Batmobile', 'Bullwhip'],
...                    "born": [pd.NaT, pd.Timestamp("1940-04-25"),
...                             pd.NaT]})
>>> df
       name        toy       born
0    Alfred        NaN        NaT
1    Batman  Batmobile 1940-04-25
2  Catwoman   Bullwhip        NaT

Drop the rows where at least one element is missing.

>>> df.dropna()
     name        toy       born
1  Batman  Batmobile 1940-04-25

Drop the columns where at least one element is missing.

>>> df.dropna(axis='columns')
       name
0    Alfred
1    Batman
2  Catwoman

Drop the rows where all elements are missing.

>>> df.dropna(how='all')
       name        toy       born
0    Alfred        NaN        NaT
1    Batman  Batmobile 1940-04-25
2  Catwoman   Bullwhip        NaT

Keep only the rows with at least 2 non-NA values.
```

```
>>> df.dropna(thresh=2)
        name         toy        born
1     Batman    Batmobile 1940-04-25
2   Catwoman     Bullwhip         NaT
```

Define in which columns to look for missing values.

```
>>> df.dropna(subset=['name', 'toy'])
        name         toy        born
1     Batman    Batmobile 1940-04-25
2   Catwoman     Bullwhip         NaT
```

Keep the DataFrame with valid entries in the same variable.

```
>>> df.dropna(inplace=True)
>>> df
       name         toy        born
1    Batman    Batmobile 1940-04-25
File:        c:\users\ankit19.
  ↪gupta\desktop\self_projects\islp\myenv\lib\site-packages\pandas\core\frame.py
Type:        method
```

```
[10]: Hitters = Hitters.dropna();
      Hitters.shape
```

```
[10]: (263, 20)
```

We frst choose the best model using forward selection based on Cp (6.2). This score is not built in as a metric to sklearn. We therefore defne a function to compute it ourselves, and use it as a scorer. By default, sklearn tries to maximize a score, hence our scoring function computes the negative Cp statistic.

```
[11]: def nCp(sigma2, estimator, X, Y):
          "Negative Cp statistic"
          n, p = X.shape
          Yhat = estimator.predict(X)
          RSS = np.sum((Y - Yhat)**2)
          return -(RSS + 2 * p * sigma2) / n
```

We need to estimate the residual variance σ^2, which is the frst argument in our scoring function above. We will ft the biggest model, using all the variables, and estimate σ^2 based on its MSE.

```
[12]: design = MS(Hitters.columns.drop('Salary')).fit(Hitters)
      Y = np.array(Hitters['Salary'])
      X = design.transform(Hitters)
      sigma2 = OLS(Y,X).fit().scale
```

The function sklearn_selected() expects a scorer with just three arguments — the last three in the defnition of nCp() above. We use the function partial() frst seen in Section 5.3.3 to freeze the frst

14

argument with our estimate of 2.

```
[13]: neg_Cp = partial(nCp, sigma2)
```

```
[14]: neg_Cp
```

```
[14]: functools.partial(<function nCp at 0x0000022D0B0B34C0>, 99591.3561796822)
```

We can now use neg_Cp() as a scorer for model selection.

Along with a score we need to specify the search strategy. This is done through the object Stepwise() in the ISLP.models package. The method Stepwise.first_peak() runs forward stepwise until any further additions to the model do not result in an improvement in the evaluation score. Similarly, the method Stepwise.fixed_steps() runs a fxed number of steps of stepwise search.

```
[15]: strategy = Stepwise.first_peak(design,direction='forward',max_terms=len(design.
      ↪terms))
```

We now ft a linear regression model with Salary as outcome using forward selection. To do so, we use the function sklearn_selected() from the ISLP.models package. This takes a model from statsmodels along with a search strategy and selects a model with its fit method. Without specifying a scoring argument, the score defaults to MSE, and so all 19 variables will be selected (output not shown).

```
[16]: hitters_MSE = sklearn_selected(OLS,strategy)
      hitters_MSE.fit(Hitters, Y)
      hitters_MSE.selected_state_
```

```
[16]: ('Assists',
       'AtBat',
       'CAtBat',
       'CHits',
       'CHmRun',
       'CRBI',
       'CRuns',
       'CWalks',
       'Division',
       'Errors',
       'Hits',
       'HmRun',
       'League',
       'NewLeague',
       'PutOuts',
       'RBI',
       'Runs',
       'Walks',
       'Years')
```

Using neg_Cp results in a smaller model, as expected, with just 10 variables selected.

```
[17]: hitters_Cp = sklearn_selected(OLS,strategy,scoring=neg_Cp)
      hitters_Cp.fit(Hitters, Y)
      hitters_Cp.selected_state_
```

[17]: ('Assists',
       'AtBat',
       'CAtBat',
       'CRBI',
       'CRuns',
       'CWalks',
       'Division',
       'Hits',
       'PutOuts',
       'Walks')

0.1.2 Choosing Among Models Using the Validation Set Approach and Cross-Validation

As an alternative to using Cp, we might try cross-validation to select a model in forward selection. For this, we need a method that stores the full path of models found in forward selection, and allows predictions for each of these. This can be done with the sklearn_selection_path() estimator from ISLP.models. The function cross_val_predict() from ISLP.models computes the cross-validated predictions for each of the models along the path, which we can use to evaluate the cross-validated MSE along the path.

Here we defne a strategy that fts the full forward selection path. While there are various parameter choices for sklearn_selection_path(), we use the defaults here, which selects the model at each step based on the biggest reduction in RSS.

```
[18]: strategy = Stepwise.fixed_steps(design,len(design.terms),direction='forward')
      full_path = sklearn_selection_path(OLS, strategy)
```

We now ft the full forward-selection path on the Hitters data and compute the ftted values.

```
[19]: full_path.fit(Hitters, Y)
      Yhat_in = full_path.predict(Hitters)
      Yhat_in.shape
```

[19]: (263, 20)

This gives us an array of ftted values — 20 steps in all, including the ftted mean for the null model — which we can use to evaluate in-sample MSE. As expected, the in-sample MSE improves each step we take, indicating we must use either the validation or cross-validation approach to select the number of steps. We fx the y-axis to range from 50,000 to 250,000 to compare to the cross-validation and validation set MSE below, as well as other methods such as ridge regression, lasso and principal components regression.

```
[20]: mse_fig, ax = subplots(figsize=(8,8))
      insample_mse = ((Yhat_in - Y[:,None])**2).mean(0)
```

```
n_steps = insample_mse.shape[0]
ax.plot(np.arange(n_steps),
insample_mse,
'k', # color black
label='In-sample')
ax.set_ylabel('MSE',
fontsize=20)
ax.set_xlabel('# steps of forward stepwise',
fontsize=20)
ax.set_xticks(np.arange(n_steps)[::2])
ax.legend()
ax.set_ylim([50000,250000]);
```
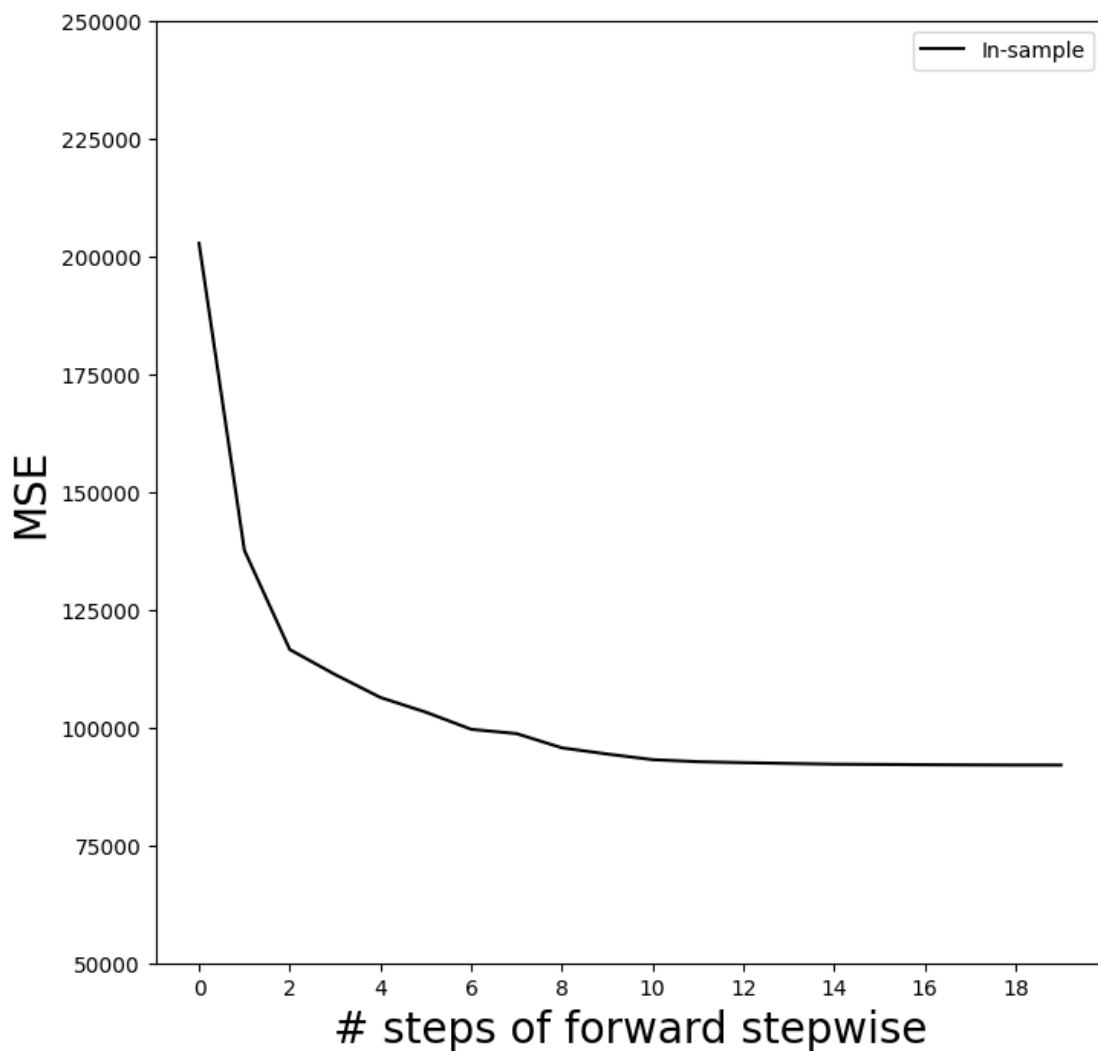

Notice the expression None in Y[:,None] above. This adds an axis (dimension) to the one-dimensional array Y, which allows it to be recycled when subtracted from the two-dimensional

Yhat_in.

We are now ready to use cross-validation to estimate test error along the model path. We must use only the training observations to perform all aspects of model-ftting — including variable selection. Therefore, the determination of which model of a given size is best must be made using only the training observations in each training fold. This point is subtle but important. If the full data set is used to select the best subset at each step, then the validation set errors and cross-validation errors that we obtain will not be accurate estimates of the test error.

We now compute the cross-validated predicted values using 5-fold crossvalidation

```
[21]: K=5
kfold = skm.KFold(K,random_state=0,shuffle=True)
Yhat_cv = skm.cross_val_predict(full_path,Hitters,Y,cv=kfold)
Yhat_cv.shape
```

```
[21]: (263, 20)
```

The prediction matrix Yhat_cv is the same shape as Yhat_in; the diference is that the predictions in each row, corresponding to a particular sample index, were made from models ft on a training fold that did not include that row.

At each model along the path, we compute the MSE in each of the crossvalidation folds. These we will average to get the mean MSE, and can also use the individual values to compute a crude estimate of the standard error of the mean.9 Hence we must know the test indices for each cross-validation split. This can be found by using the split() method of kfold. Because we fxed the random state above, whenever we split any array with the same number of rows as Y we recover the same training and test indices, though we simply ignore the training indices below.

The estimate is crude because the fve error estimates are based on overlapping training sets, and hence are not independent.

```
[23]: cv_mse = []
for train_idx, test_idx in kfold.split(Y):
    errors = (Yhat_cv[test_idx] - Y[test_idx,None])**2
    cv_mse.append(errors.mean(0)) # column means
cv_mse = np.array(cv_mse).T
cv_mse.shape
```

```
[23]: (20, 5)
```

We now add the cross-validation error estimates to our MSE plot. We include the mean error across the fve folds, and the estimate of the standard error of the mean.

```
[24]: ax.errorbar(np.arange(n_steps),
cv_mse.mean(1),
cv_mse.std(1) / np.sqrt(K),
label='Cross-validated',
c='r') # color red
ax.set_ylim([50000,250000])
ax.legend()
```

```
mse_fig
```

[24]:
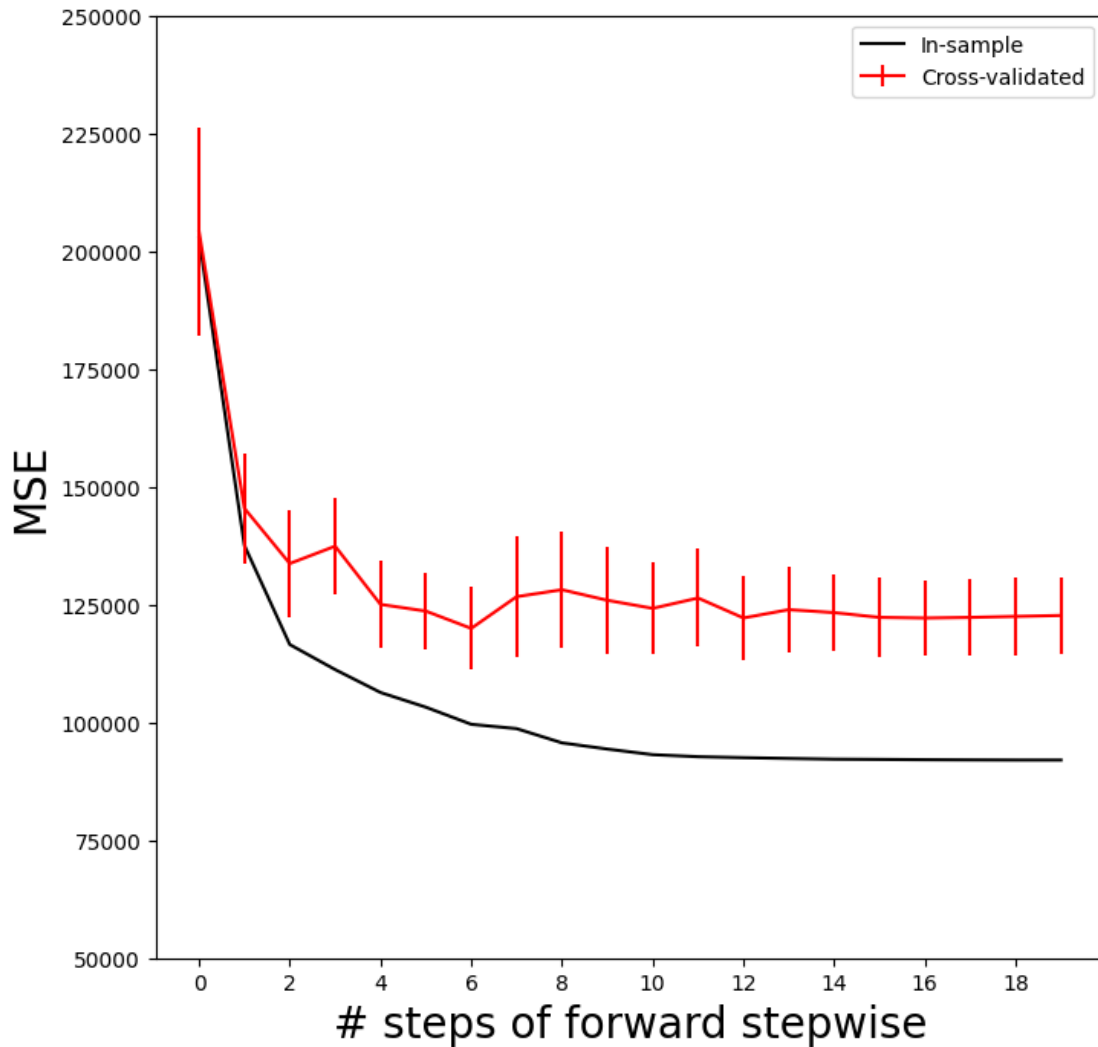
To repeat the above using the validation set approach, we simply change our cv argument to a validation set: one random split of the data into a test and training. We choose a test size of 20%, similar to the size of each test set in 5-fold cross-validation.

[25]:
```
validation = skm.ShuffleSplit(n_splits=1,test_size=0.2,random_state=0)
for train_idx, test_idx in validation.split(Y):
    full_path.fit(Hitters.iloc[train_idx],
    Y[train_idx])
    Yhat_val = full_path.predict(Hitters.iloc[test_idx])
    errors = (Yhat_val - Y[test_idx,None])**2
    validation_mse = errors.mean(0)
```

As for the in-sample MSE case, the validation set approach does not provide standard errors.

```
[26]: ax.plot(np.arange(n_steps),validation_mse,'b--', # color blue, broken line
      label='Validation')
      ax.set_xticks(np.arange(n_steps)[::2])
      ax.set_ylim([50000,250000])
      ax.legend()
      mse_fig
```

[26]:
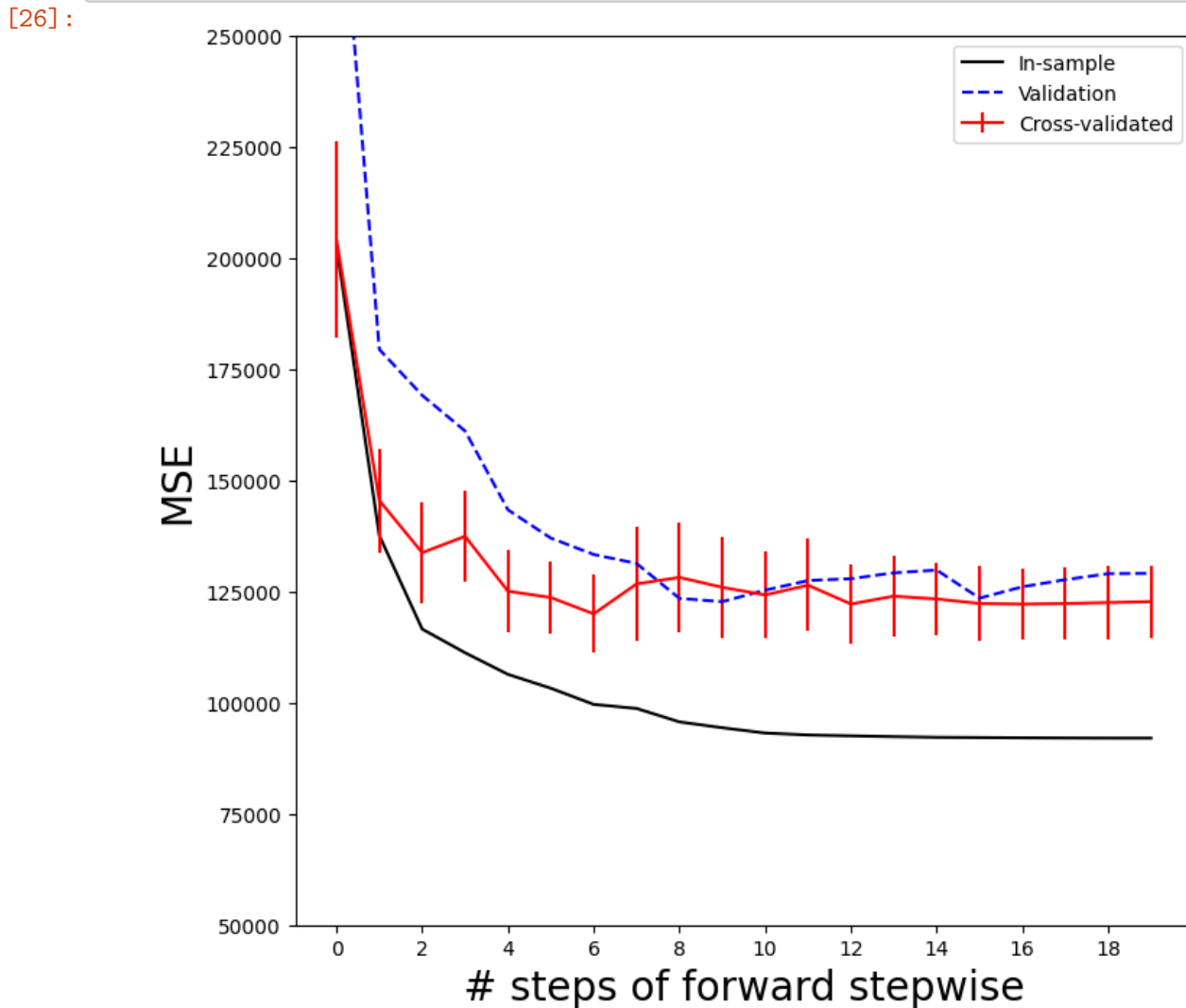
0.2 Best Subset Selection

Forward stepwise is a greedy selection procedure; at each step it augments the current set by including one additional variable. We now apply best subset selection to the Hitters data, which for every subset size, searches for the best set of predictors.

We will use a package called l0bnb to perform best subset selection. Instead of constraining the subset to be a given size, this package produces a path of solutions using the subset size as a

penalty rather than a constraint. Although the distinction is subtle, the diference comes when we crossvalidate

```
[27]: D = design.fit_transform(Hitters)
      D = D.drop('intercept', axis=1)
      X = np.asarray(D)
```

Here we excluded the frst column corresponding to the intercept, as l0bnb will ft the intercept separately. We can fnd a path using the fit_path() function.

```
[28]: path = fit_path(X,Y,max_nonzeros=X.shape[1])
```

```
Preprocessing Data.
BnB Started.
Iteration: 1. Number of non-zeros:  1
Iteration: 2. Number of non-zeros:  2
Iteration: 3. Number of non-zeros:  2
Iteration: 4. Number of non-zeros:  2
Iteration: 5. Number of non-zeros:  3
Iteration: 6. Number of non-zeros:  3
Iteration: 7. Number of non-zeros:  4
Iteration: 8. Number of non-zeros:  9
Iteration: 9. Number of non-zeros:  9
Iteration: 10. Number of non-zeros:  9
Iteration: 11. Number of non-zeros:  9
Iteration: 12. Number of non-zeros:  9
Iteration: 13. Number of non-zeros:  9
Iteration: 14. Number of non-zeros:  9
Iteration: 15. Number of non-zeros:  9
Iteration: 16. Number of non-zeros:  9
Iteration: 17. Number of non-zeros:  9
Iteration: 18. Number of non-zeros:  17
Iteration: 19. Number of non-zeros:  19
```

The function fit_path() returns a list whose values include the ftted coefcients as B, an intercept as B0, as well as a few other attributes related to the particular path algorithm used. Such details are beyond the scope of this book.

```
[29]: path[3]
```

```
[29]: {'B': array([0.        , 3.25484367, 0.        , 0.        , 0.        ,
              0.        , 0.        , 0.        , 0.        , 0.        ,
              0.        , 0.67775265, 0.        , 0.        , 0.        ,
              0.        , 0.        , 0.        , 0.        ]),
       'B0': -38.98216739555505,
       'lambda_0': 0.011416248027450187,
       'M': 0.5829861733382012,
       'Time_exceeded': False}
```

In the example above, we see that at the fourth step in the path, we have two nonzero coefcients

in 'B', corresponding to the value 0.114 for the penalty parameter lambda_0. We could make predictions using this sequence of fts on a validation set as a function of lambda_0, or with more work using cross-validation.

0.3   6.5.2 Ridge Regression and the Lasso

We will use the sklearn.linear_model package (for which we use skl as shorthand below) to ft ridge and lasso regularized linear models on the Hitters data. We start with the model matrix X (without an intercept) that we computed in the previous section on best subset regression.

0.3.1   Ridge Regression

We will use the function skl.ElasticNet() to ft both ridge and the lasso. To skl.Elastic Net() ft a path of ridge regressions models, we use skl.ElasticNet.path(), which can ft both ridge and lasso, as well as a hybrid mixture; ridge regression corresponds to l1_ratio=0. It is good practice to standardize the columns of X in these applications, if the variables are measured in diferent units. Since skl.ElasticNet() does no normalization, we have to take care of that ourselves. Since we standardize frst, in order to fnd coefcient estimates on the original scale, we must unstandardize the coefcient estimates. The parameter   in (6.5) and (6.7) is called alphas in sklearn. In order to be consistent with the rest of this chapter, we use lambdas rather than alphas in what follows.

```
[31]:  Xs = X - X.mean(0)[None,:]
       X_scale = X.std(0)
       Xs = Xs / X_scale[None,:]
       lambdas = 10**np.linspace(8, -2, 100) / Y.std()
       soln_array = skl.ElasticNet.path(Xs,Y,l1_ratio=0.,alphas=lambdas)[1]
       soln_array.shape
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64428165.36474803, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64428069.135193564, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64427947.709570706, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64427794.49147929, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64427601.15801401, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64427357.208145335, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64427049.39312406, tolerance: 12885.7065737425

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64426660.99818401, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64426170.936871, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64425552.60935727, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64424772.46361481, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
```

```
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64423788.18271286, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64422546.402046196, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64420979.836119056, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64419003.66458898, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64416510.99045885, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64413367.138336174, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64409402.50628651, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64404403.61988451, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64398101.96098537, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64390160.05690916, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
```

is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64380154.22050254, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64367553.23368757, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64351692.17811265, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64331740.55708714, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64306663.85815487, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64275177.83204634, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64235695.09903011, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64186264.367964305, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64124503.75014188, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 64047531.61120446, tolerance: 12885.7065737425

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 63951901.41718618, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 63833551.374737374, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 63687785.48493876, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 63509309.685659595, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
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```
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 63292354.02159835, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 63030916.89990266, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 62719166.29703928, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 62352019.35443869, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 61925889.875772476, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
```

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 61439539.89859062, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 60894903.039219804, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 60297684.60747656, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 59657521.16598571, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 58987535.05051082, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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```

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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 58303257.30893663, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 57621079.35589412, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 56956552.36298917, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 56322906.14367991, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 55730077.75280342, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 55184365.56435658, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 54688640.34364892, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 54242923.97107168, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 53845116.92275897, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 53491699.68250864, tolerance: 12885.7065737425
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 53178310.76477922, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 52900177.0923312, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 52652419.277090184, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 52430270.98847021, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations.
Duality gap: 52229246.493769206, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 52045276.25129582, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 51874817.107615925, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 51714935.48095584, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 51563358.53546299, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 51418487.86706318, tolerance: 12885.7065737425
   model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 51279371.620424554, tolerance: 12885.7065737425
   model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 51145634.32609798, tolerance: 12885.7065737425
   model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 51017369.0029907, tolerance: 12885.7065737425
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50895002.0660191, tolerance: 12885.7065737425
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
```

is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50779146.50047484, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50670461.07683644, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50569532.27326827, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50476790.98101052, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50392468.80539258, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50316590.69087267, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50248994.15213533, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50189362.604503974, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50137261.69126299, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50092171.83247443, tolerance: 12885.7065737425

```
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50053515.081623286, tolerance: 12885.7065737425
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 50020677.61213049, tolerance: 12885.7065737425
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49993029.95018308, tolerance: 12885.7065737425
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49969946.08142662, tolerance: 12885.7065737425
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
```

```
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49950821.12032742, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49935086.37579522, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49922220.655422136, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49911757.23721742, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49903286.65921818, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49896456.018610224, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49890965.72521002, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49886564.66025462, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49883044.54819702, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49880234.14784623, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
```

is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49877993.670362815, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49876209.66553524, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49874790.49349912, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49873662.41408346, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49872766.272820055, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

```
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49872054.7330007, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 49871489.98963834, tolerance: 12885.7065737425
  model = cd_fast.enet_coordinate_descent_gram(
```

[31]: (19, 100)

Here we extract the array of coefcients corresponding to the solutions along the regularization path. By default the skl.ElasticNet.path method fts a path along an automatically selected range of values, except for the case when l1_ratio=0, which results in ridge regression (as is the case here).11 So here we have chosen to implement the function over a grid of values ranging from $= 10$8 to $= 10-2$ scaled by the standard deviation of y, essentially covering the full range of scenarios from the null model containing only the intercept, to the least squares ft.

Associated with each value of is a vector of ridge regression coefcients, that can be accessed by a column of soln_array. In this case, soln_array is a 19 × 100 matrix, with 19 rows (one for each predictor) and 100 columns (one for each value of).

We transpose this matrix and turn it into a data frame to facilitate viewing and plotting.

```
[32]: soln_path = pd.DataFrame(soln_array.T,columns=D.columns,index=-np.log(lambdas))
      soln_path.index.name = 'negative log(lambda)'
      soln_path
```

[32]:

negative log(lambda)	AtBat	Hits	HmRun	Runs	RBI \
-12.310855	0.000800	0.000889	0.000695	0.000851	0.000911
-12.078271	0.001010	0.001122	0.000878	0.001074	0.001150
-11.845686	0.001274	0.001416	0.001107	0.001355	0.001451
-11.613102	0.001608	0.001787	0.001397	0.001710	0.001831
-11.380518	0.002029	0.002255	0.001763	0.002158	0.002310
...	...	...	...	...	...
9.784658	-290.823989	336.929968	37.322686	-59.748520	-26.507086
10.017243	-290.879272	337.113713	37.431373	-59.916820	-26.606957

10.249827	-290.923382	337.260446	37.518064	-60.051166	-26.686604
10.482412	-290.958537	337.377455	37.587122	-60.158256	-26.750044
10.714996	-290.986528	337.470648	37.642077	-60.243522	-26.800522

	Walks	Years	CAtBat	CHits	CHmRun \
negative log(lambda)					
-12.310855	0.000900	0.000812	0.001067	0.001113	0.001064
-12.078271	0.001135	0.001025	0.001346	0.001404	0.001343
-11.845686	0.001433	0.001293	0.001698	0.001772	0.001694
-11.613102	0.001808	0.001632	0.002143	0.002236	0.002138
-11.380518	0.002281	0.002059	0.002704	0.002821	0.002698
…	…	…	…	…	…
9.784658	134.855915	-17.216195	-387.775826	89.573601	-12.273926
10.017243	134.900549	-17.108041	-388.458404	89.000707	-12.661459
10.249827	134.936136	-17.022194	-388.997470	88.537380	-12.971603
10.482412	134.964477	-16.954081	-389.423414	88.164178	-13.219329
10.714996	134.987027	-16.900054	-389.760135	87.864551	-13.416889

	CRuns	CRBI	CWalks	League[N] \
negative log(lambda)				
-12.310855	0.001141	0.001149	0.000993	-0.000029
-12.078271	0.001439	0.001450	0.001253	-0.000037
-11.845686	0.001816	0.001830	0.001581	-0.000046
-11.613102	0.002292	0.002309	0.001995	-0.000058
-11.380518	0.002892	0.002914	0.002517	-0.000073
…	…	…	…	…
9.784658	476.079273	257.271255	-213.124780	31.258215
10.017243	477.031349	257.966790	-213.280891	31.256434
10.249827	477.791860	258.523025	-213.405740	31.254958
10.482412	478.398404	258.967059	-213.505412	31.253747
10.714996	478.881540	259.321007	-213.584869	31.252760

	Division[W]	PutOuts	Assists	Errors \
negative log(lambda)				
-12.310855	-0.000390	0.000609	0.000052	-0.000011
-12.078271	-0.000492	0.000769	0.000065	-0.000014
-11.845686	-0.000621	0.000970	0.000082	-0.000017
-11.613102	-0.000784	0.001224	0.000104	-0.000022
-11.380518	-0.000990	0.001544	0.000131	-0.000028
…	…	…	…	…
9.784658	-58.457857	78.761266	53.622113	-22.208456
10.017243	-58.448850	78.761240	53.645147	-22.198802
10.249827	-58.441682	78.761230	53.663357	-22.191071
10.482412	-58.435983	78.761230	53.677759	-22.184893
10.714996	-58.431454	78.761235	53.689152	-22.179964

NewLeague[N]

```
negative log(lambda)
-12.310855                      -0.000006
-12.078271                      -0.000007
-11.845686                      -0.000009
-11.613102                      -0.000012
-11.380518                      -0.000015
 …                                 …
  9.784658                     -12.402891
 10.017243                     -12.391969
 10.249827                     -12.383205
 10.482412                     -12.376191
 10.714996                     -12.370587

[100 rows x 19 columns]
```

We plot the paths to get a sense of how the coefcients vary with . To control the location of the legend we frst set legend to False in the plot method, adding it afterward with the legend() method of ax.

```
[33]: path_fig, ax = subplots(figsize=(8,8))
      soln_path.plot(ax=ax, legend=False)
      ax.set_xlabel('$-\log(\lambda)$', fontsize=20)
      ax.set_ylabel('Standardized coefficients', fontsize=20)
      ax.legend(loc='upper left');
```
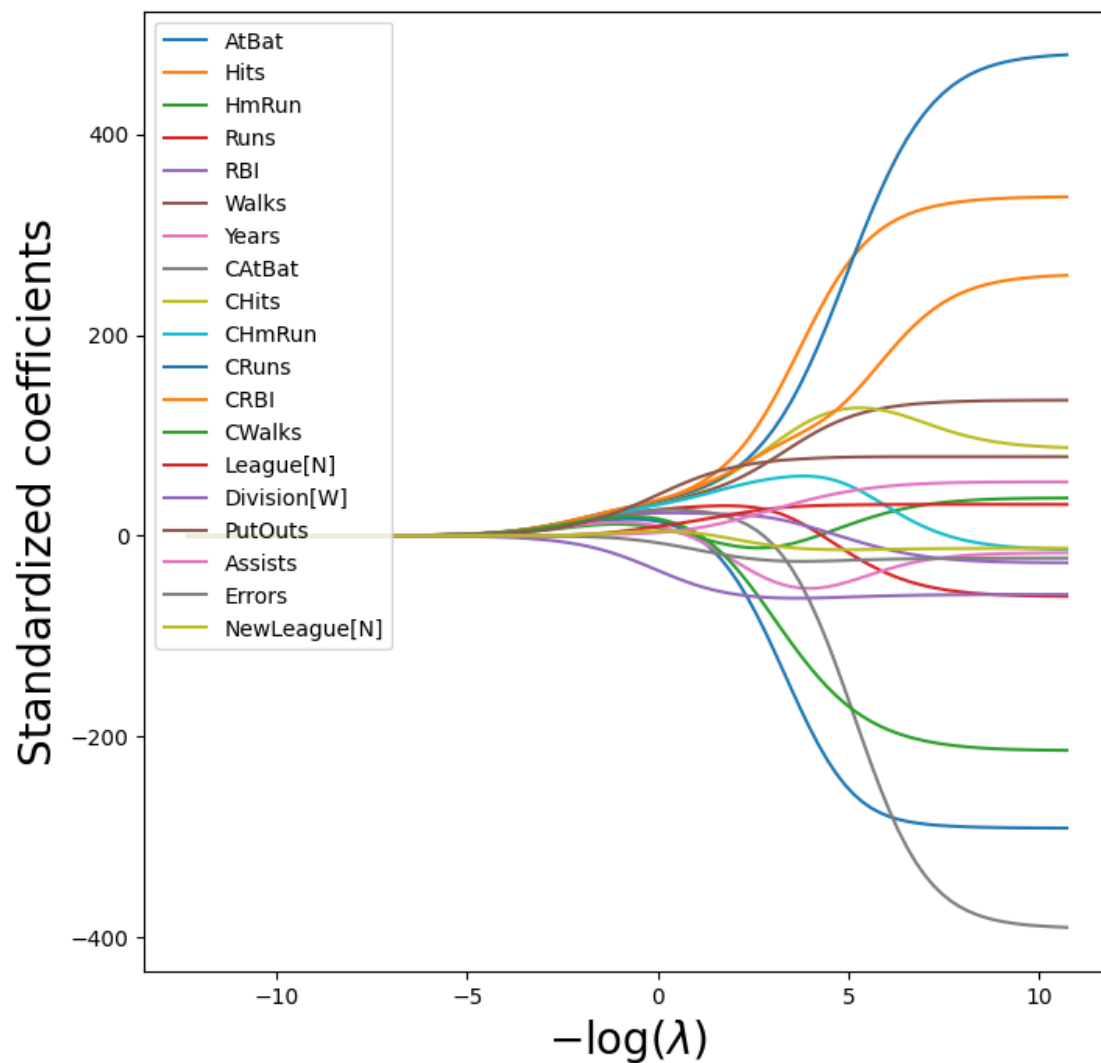
We expect the coefcient estimates to be much smaller, in terms of %2 norm, when a large value of λ is used, as compared to when a small value of λ is used. (Recall that the %2 norm is the square root of the sum of squared coefcient values.) We display the coefcients at the 40th step, where λ is 25.535.

```
[35]: beta_hat = soln_path.loc[soln_path.index[39]]
      lambdas[39], beta_hat
```

```
[35]: (25.53538897200662,
      AtBat            5.433750
      Hits             6.223582
      HmRun            4.585498
      Runs             5.880855
      RBI              6.195921
```

```
Walks           6.277975
Years           5.299767
CAtBat          7.147501
CHits           7.539495
CHmRun          7.182344
CRuns           7.728649
CRBI            7.790702
CWalks          6.592901
League[N]       0.042445
Division[W]    -3.107159
PutOuts         4.605263
Assists         0.378371
Errors         -0.135196
NewLeague[N]    0.150323
Name: -3.240065292879872, dtype: float64)
```

Let's compute the l2 norm of the standardized coefcients.

[36]: `np.linalg.norm(beta_hat)`

[36]: 24.17061720144378

In contrast, here is the l2 norm when   is 2.44e-01. Note the much larger l2 norm of the coefcients associated with this smaller value of .

[37]:
```
beta_hat = soln_path.loc[soln_path.index[59]]
lambdas[59], np.linalg.norm(beta_hat)
```

[37]: (0.24374766133488554, 160.42371017726032)

Above we normalized X upfront, and ft the ridge model using Xs. The Pipeline() object in sklearn provides a clear way to separate feature normalization from the ftting of the ridge model itself.

[38]:
```
ridge = skl.ElasticNet(alpha=lambdas[59], l1_ratio=0)
scaler = StandardScaler(with_mean=True, with_std=True)
pipe = Pipeline(steps=[('scaler', scaler), ('ridge', ridge)])
pipe.fit(X, Y)
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.446e+07, tolerance: 5.332e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
```

[38]: Pipeline(steps=[('scaler', StandardScaler()),
                ('ridge', ElasticNet(alpha=0.24374766133488554, l1_ratio=0))])

We show that it gives the same l2 norm as in our previous ft on the standardized data.

`[40]:` `np.linalg.norm(ridge.coef_)`

`[40]:` `160.42371017725904`

Notice that the operation pipe.fit(X, Y) above has changed the ridge object, and in particular has added attributes such as coef__ that were not there before.

0.3.2 Estimating Test Error of Ridge Regression

Choosing an a priori value of   for ridge regression is difcult if not impossible. We will want to use the validation method or cross-validation to select the tuning parameter. The reader may not be surprised that the Pipeline() approach can be used in skm.cross__validate() with either a validation method (i.e. validation) or k-fold cross-validation.

We fx the random state of the splitter so that the results obtained will be reproducible.

`[41]:`
```
validation = skm.ShuffleSplit(n_splits=1,test_size=0.5,random_state=0)
ridge.alpha = 0.01
results = skm.
 ↪cross_validate(ridge,X,Y,scoring='neg_mean_squared_error',cv=validation)
-results['test_score']
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.486e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
```

`[41]:` `array([134214.00419204])`

The test MSE is 1.342e+05. Note that if we had instead simply ft a model with just an intercept, we would have predicted each test observation using the mean of the training observations. We can get the same result by ftting a ridge regression model with a very large value of . Note that 1e10 means 10^{10}.

`[42]:`
```
ridge.alpha = 1e10
results = skm.
 ↪cross_validate(ridge,X,Y,scoring='neg_mean_squared_error',cv=validation)
-results['test_score']
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.136e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
```

```
        solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
          model = cd_fast.enet_coordinate_descent(
```

[42]: `array([231788.32155285])`

Obviously choosing $\quad$ = 0.01 is arbitrary, so we will use cross-validation or the validation-set approach to choose the tuning parameter . The object GridSearchCV() allows exhaustive grid search to choose such a parameter.

Grid We frst use the validation set method to choose

```
[43]: param_grid = {'ridge__alpha': lambdas}
      grid = skm.GridSearchCV(pipe,
      param_grid,
      cv=validation,
      scoring='neg_mean_squared_error')
      grid.fit(X, Y)
      grid.best_params_['ridge__alpha']
      grid.best_estimator_
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.136e+07, tolerance: 2.272e+03 Linear regression models with null weight
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gap: 1.136e+07, tolerance: 2.272e+03 Linear regression models with null weight
```

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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.128e+07, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.127e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.124e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.121e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.117e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.113e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.107e+07, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.100e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.091e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.081e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.069e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.055e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.038e+07, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.019e+07, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.977e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.744e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.494e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.234e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.968e+06, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.704e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.448e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.204e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 7.977e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 7.769e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 7.581e+06, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 7.412e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 7.261e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 7.127e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 7.008e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.900e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.803e+06, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.714e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.632e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.554e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.480e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.409e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.342e+06, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.276e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.214e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.154e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.097e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 6.043e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.991e+06, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.943e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.898e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.856e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.817e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.780e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.746e+06, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.715e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.687e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.661e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
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gap: 5.616e+06, tolerance: 2.272e+03 Linear regression models with null weight
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.596e+06, tolerance: 2.272e+03 Linear regression models with null weight

for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.579e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.563e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.550e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 5.538e+06, tolerance: 2.272e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 5.528e+06, tolerance: 2.272e+03 Linear regression models with null weight
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gap: 5.512e+06, tolerance: 2.272e+03 Linear regression models with null weight
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gap: 5.490e+06, tolerance: 2.272e+03 Linear regression models with null weight

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  model = cd_fast.enet_coordinate_descent(
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Objective did not converge. You might want to increase the number of iterations,
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gap: 5.482e+06, tolerance: 2.272e+03 Linear regression models with null weight

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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.248e+07, tolerance: 5.332e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
    model = cd_fast.enet_coordinate_descent(

```
[43]: Pipeline(steps=[('scaler', StandardScaler()),
                      ('ridge', ElasticNet(alpha=0.005899006046740856, l1_ratio=0))])
```

Alternatively, we can use 5-fold cross-validation.

```
[44]: grid = skm.
      ↪GridSearchCV(pipe,param_grid,cv=kfold,scoring='neg_mean_squared_error')
      grid.fit(X, Y)
      grid.best_params_['ridge__alpha']
      grid.best_estimator_
```

C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.880e+07, tolerance: 3.759e+03 Linear regression models with null weight
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    model = cd_fast.enet_coordinate_descent(
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Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.223e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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Objective did not converge. You might want to increase the number of iterations,
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gap: 1.879e+07, tolerance: 3.759e+03 Linear regression models with null weight
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.209e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.872e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.091e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.223e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.212e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

```
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.207e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.870e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.089e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.220e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.210e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.204e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

```
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.867e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.086e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.217e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.207e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.200e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.864e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.082e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.213e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.203e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.196e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.860e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.077e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.208e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.197e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.190e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.855e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.183e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.849e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.063e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.194e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.183e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.174e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.841e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.054e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.184e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.173e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.163e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.832e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.043e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.172e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.161e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.149e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.820e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.029e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.157e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.146e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.132e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.806e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.012e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.139e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.129e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.112e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.789e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.992e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.117e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.107e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.087e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.769e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.968e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.091e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.081e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.058e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.745e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.939e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.060e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.051e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.024e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.718e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.907e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.024e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.015e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.984e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.686e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.869e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.984e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.975e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.939e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.650e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.828e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.938e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.929e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.888e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.611e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.783e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.888e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.880e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.832e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.568e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.734e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.834e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.826e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.772e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.524e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.684e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.778e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.770e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.710e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

```
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.478e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.633e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.721e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.713e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.646e+07, tolerance: 4.437e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.432e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

```
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.582e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.663e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.655e+07, tolerance: 4.445e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.582e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.388e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.533e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.607e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.599e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.520e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.345e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.486e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.554e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

```
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.545e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.460e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.305e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.443e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.504e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.494e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.404e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.268e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.403e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.457e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.447e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.352e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.234e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.366e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.415e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.405e+07, tolerance: 4.445e+03 Linear regression models with null weight
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.305e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.204e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.333e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.377e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 1.366e+07, tolerance: 4.445e+03 Linear regression models with null weight
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.262e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.177e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.343e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 1.331e+07, tolerance: 4.445e+03 Linear regression models with null weight
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.224e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.154e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.278e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.312e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

```
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.300e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.190e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.133e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.255e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.284e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.272e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

```
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.159e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.114e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.234e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.260e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.247e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.132e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.098e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.215e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.237e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.225e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.109e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.083e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.198e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.217e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.204e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.088e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.070e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.182e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

```
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.198e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.186e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.069e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.058e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.167e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.181e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.169e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.053e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.047e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.153e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.165e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.153e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.038e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.037e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.139e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.149e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.138e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.024e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

```
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.027e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.126e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.135e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.124e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.012e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.017e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.114e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.121e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.110e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.001e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.007e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.102e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.108e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.097e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.902e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.982e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.090e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.095e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.084e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.804e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.894e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.078e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.084e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.071e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.713e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.808e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.067e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.073e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.060e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.627e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.727e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.057e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.062e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.048e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.548e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.650e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.047e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.053e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.038e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.474e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.579e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.037e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.045e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.028e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.406e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.514e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.028e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 1.037e+07, tolerance: 4.466e+03 Linear regression models with null weight
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.286e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 9.402e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 1.011e+07, tolerance: 4.201e+03 Linear regression models with null weight
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.024e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.003e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.234e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.355e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.004e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.019e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.969e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.187e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.314e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.966e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.014e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.914e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.145e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.279e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.902e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.010e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.865e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.108e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.249e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.843e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.007e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.824e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.075e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.223e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.790e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.004e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.790e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.047e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.202e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.743e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.001e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.761e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.022e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
```

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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.184e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.700e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.990e+06, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.737e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.000e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.169e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.663e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.971e+06, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.717e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.982e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.156e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.630e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.956e+06, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.701e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 8.966e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.146e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.601e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.688e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.138e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.575e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.677e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:

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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.942e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.132e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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gap: 9.554e+06, tolerance: 4.201e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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Objective did not converge. You might want to increase the number of iterations,
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gap: 9.668e+06, tolerance: 4.445e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.126e+06, tolerance: 3.759e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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gap: 9.535e+06, tolerance: 4.201e+03 Linear regression models with null weight
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gap: 9.917e+06, tolerance: 4.466e+03 Linear regression models with null weight
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gap: 9.122e+06, tolerance: 3.759e+03 Linear regression models with null weight
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gap: 9.507e+06, tolerance: 4.201e+03 Linear regression models with null weight
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
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gap: 9.116e+06, tolerance: 3.759e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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gap: 9.496e+06, tolerance: 4.201e+03 Linear regression models with null weight
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gap: 9.902e+06, tolerance: 4.466e+03 Linear regression models with null weight
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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Objective did not converge. You might want to increase the number of iterations,
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gap: 9.647e+06, tolerance: 4.445e+03 Linear regression models with null weight
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Objective did not converge. You might want to increase the number of iterations,
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gap: 9.114e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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gap: 9.899e+06, tolerance: 4.466e+03 Linear regression models with null weight
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gap: 9.644e+06, tolerance: 4.445e+03 Linear regression models with null weight
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gap: 9.480e+06, tolerance: 4.201e+03 Linear regression models with null weight
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gap: 9.897e+06, tolerance: 4.466e+03 Linear regression models with null weight
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gap: 8.905e+06, tolerance: 4.437e+03 Linear regression models with null weight
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gap: 9.474e+06, tolerance: 4.201e+03 Linear regression models with null weight
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```

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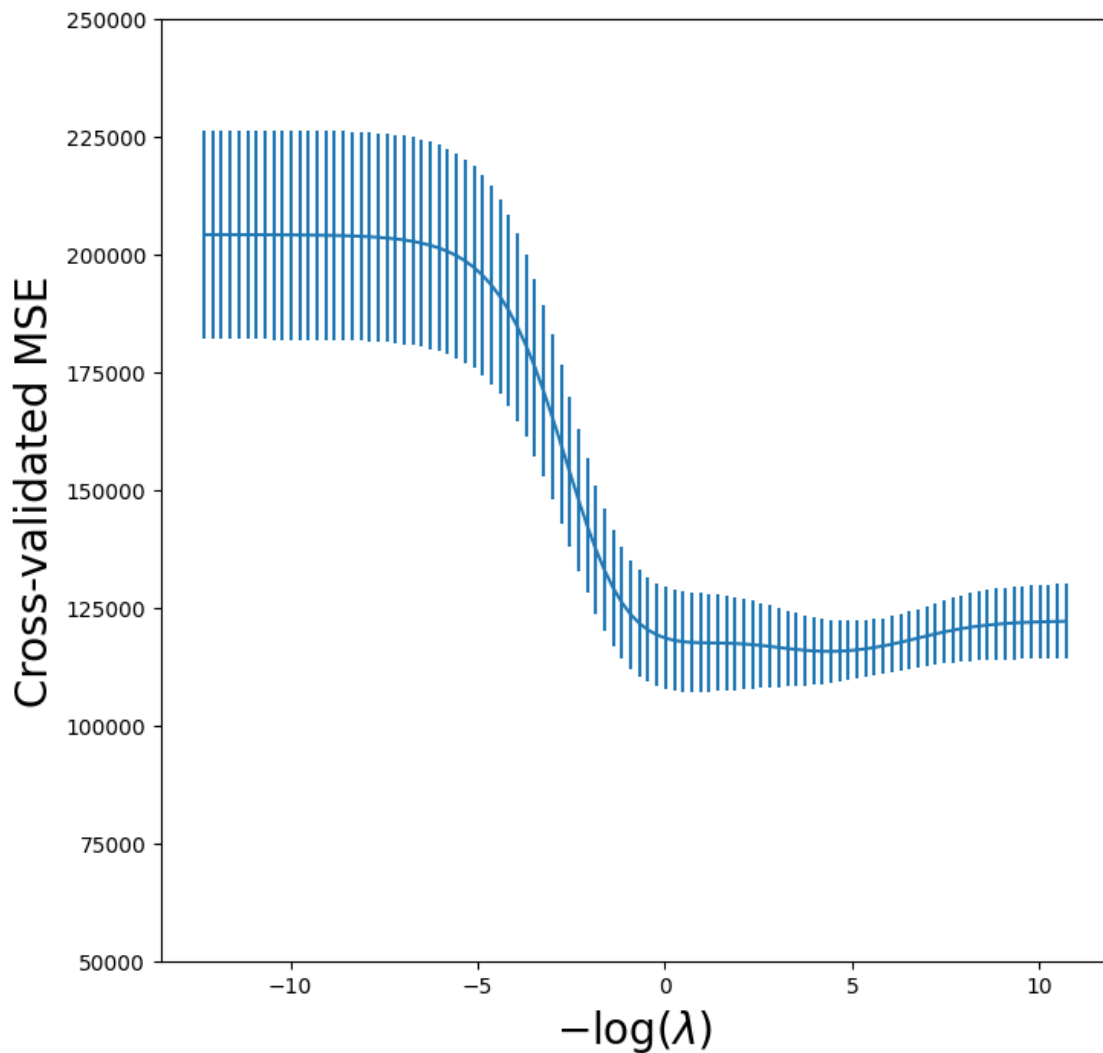 model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(

```
[44]: Pipeline(steps=[('scaler', StandardScaler()),
                      ('ridge', ElasticNet(alpha=0.01185247763144249, l1_ratio=0))])
```

Recall we set up the kfold object for 5-fold cross-validation on page 271. We now plot the cross-validated MSE as a function of $-\log()$, which has shrinkage decreasing from left to right.

```
[45]: ridge_fig, ax = subplots(figsize=(8,8))
ax.errorbar(-np.log(lambdas),
-grid.cv_results_['mean_test_score'],
yerr=grid.cv_results_['std_test_score'] / np.sqrt(K))
ax.set_ylim([50000,250000])
ax.set_xlabel('$-\log(\lambda)$', fontsize=20)
ax.set_ylabel('Cross-validated MSE', fontsize=20);
```


One can cross-validate diferent metrics to choose a parameter. The default metric for

150

skl.ElasticNet() is test R2. Let's compare R2 to MSE for cross-validation here.

```
[46]: grid_r2 = skm.GridSearchCV(pipe,
      param_grid,
      cv=kfold)
      grid_r2.fit(X, Y)
```

C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.880e+07, tolerance: 3.759e+03 Linear regression models with null weight
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.095e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.227e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.216e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.211e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.873e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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check the scale of the features or consider increasing regularisation. Duality
gap: 2.093e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.225e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.215e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.209e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.872e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.212e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.207e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.870e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.089e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.220e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.210e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.867e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.217e+07, tolerance: 4.466e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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gap: 2.200e+07, tolerance: 4.437e+03 Linear regression models with null weight
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.864e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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gap: 2.082e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 2.213e+07, tolerance: 4.466e+03 Linear regression models with null weight
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.208e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.855e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.849e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
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gap: 2.174e+07, tolerance: 4.437e+03 Linear regression models with null weight
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gap: 1.841e+07, tolerance: 3.759e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.054e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.043e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.172e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.161e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.149e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.820e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.029e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.157e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.146e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.132e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.806e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.139e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.129e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.112e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.789e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.992e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.117e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.107e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.087e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.769e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.968e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 2.091e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.939e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.060e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.051e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.024e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.718e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.907e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.024e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 2.015e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.984e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.686e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.869e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.984e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.975e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.888e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.611e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.783e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.888e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.880e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.832e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.568e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.734e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.834e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.826e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.772e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.524e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.684e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.778e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.478e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.633e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.721e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.713e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.646e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.432e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.582e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.663e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.655e+07, tolerance: 4.445e+03 Linear regression models with null weight
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gap: 1.582e+07, tolerance: 4.437e+03 Linear regression models with null weight
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.388e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.533e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.607e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.520e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.345e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.486e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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gap: 1.554e+07, tolerance: 4.466e+03 Linear regression models with null weight
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gap: 1.545e+07, tolerance: 4.445e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.460e+07, tolerance: 4.437e+03 Linear regression models with null weight
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  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.305e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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check the scale of the features or consider increasing regularisation. Duality
gap: 1.415e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 1.405e+07, tolerance: 4.445e+03 Linear regression models with null weight
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gap: 1.305e+07, tolerance: 4.437e+03 Linear regression models with null weight
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gap: 1.204e+07, tolerance: 3.759e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 1.333e+07, tolerance: 4.201e+03 Linear regression models with null weight
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gap: 1.377e+07, tolerance: 4.466e+03 Linear regression models with null weight
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.177e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.304e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.343e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.331e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.224e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.154e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.278e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.312e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.300e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.190e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.133e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.255e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.284e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.272e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.159e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.114e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.234e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.260e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.247e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.132e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.098e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.215e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.237e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.225e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.109e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.083e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.198e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.217e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.204e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.088e+07, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.070e+07, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.182e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.198e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.186e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.069e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.058e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.167e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.181e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.169e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.053e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.047e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.153e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.165e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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gap: 1.153e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.038e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.037e+07, tolerance: 3.759e+03 Linear regression models with null weight
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  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.139e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
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gap: 1.149e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 1.138e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
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Objective did not converge. You might want to increase the number of iterations,
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gap: 1.024e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.027e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.126e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.135e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.124e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.012e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.017e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.114e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.121e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.110e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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gap: 1.001e+07, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.007e+07, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.102e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.108e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.097e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.902e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.982e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.090e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.095e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.084e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.804e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.894e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.078e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.084e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.071e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.713e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.808e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.067e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
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gap: 1.073e+07, tolerance: 4.466e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.060e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.627e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.727e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.057e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.062e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.048e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.548e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.650e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.047e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.053e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.038e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.474e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.579e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.037e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.045e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.028e+07, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.406e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.514e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.028e+07, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.343e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.454e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.019e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.030e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.011e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.286e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.402e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.011e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.024e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.003e+07, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.234e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.355e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.004e+07, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.019e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.969e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.187e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.314e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.966e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.014e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.914e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.145e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.279e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.902e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.010e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.865e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.108e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.249e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.843e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 1.007e+07, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.824e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.075e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.223e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.790e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.004e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.790e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.047e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.202e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.743e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.001e+07, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.761e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.022e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.184e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.700e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.990e+06, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.737e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.000e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.169e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.663e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.971e+06, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.717e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 8.982e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.156e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.630e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.956e+06, tolerance: 4.466e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.701e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 8.966e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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  model = cd_fast.enet_coordinate_descent(
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.688e+06, tolerance: 4.445e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 8.953e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.138e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.575e+06, tolerance: 4.201e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 9.933e+06, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 9.677e+06, tolerance: 4.445e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.942e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.132e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.554e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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Objective did not converge. You might want to increase the number of iterations,
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gap: 9.917e+06, tolerance: 4.466e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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gap: 9.661e+06, tolerance: 4.445e+03 Linear regression models with null weight
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gap: 8.926e+06, tolerance: 4.437e+03 Linear regression models with null weight
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Objective did not converge. You might want to increase the number of iterations,
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gap: 9.122e+06, tolerance: 3.759e+03 Linear regression models with null weight
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gap: 9.507e+06, tolerance: 4.201e+03 Linear regression models with null weight
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  model = cd_fast.enet_coordinate_descent(
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Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.114e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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Objective did not converge. You might want to increase the number of iterations,
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gap: 9.487e+06, tolerance: 4.201e+03 Linear regression models with null weight
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gap: 9.899e+06, tolerance: 4.466e+03 Linear regression models with null weight
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gap: 9.644e+06, tolerance: 4.445e+03 Linear regression models with null weight
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gap: 9.112e+06, tolerance: 3.759e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.111e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.474e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

```
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.895e+06, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.640e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.903e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.893e+06, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

```
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.901e+06, tolerance: 4.437e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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gap: 9.109e+06, tolerance: 3.759e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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Objective did not converge. You might want to increase the number of iterations,
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gap: 9.465e+06, tolerance: 4.201e+03 Linear regression models with null weight
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  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.892e+06, tolerance: 4.466e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 9.638e+06, tolerance: 4.445e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 8.900e+06, tolerance: 4.437e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.108e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.462e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.107e+06, tolerance: 3.759e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model_coordinate_descent.py:628: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations, check the scale of the features or consider increasing regularisation. Duality gap: 9.458e+06, tolerance: 4.201e+03 Linear regression models with null weight for the l1 regularization term are more efficiently fitted using one of the solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

```
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
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packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 8.897e+06, tolerance: 4.437e+03 Linear regression models with null weight
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solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.271e+07, tolerance: 5.332e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(

[46]: GridSearchCV(cv=KFold(n_splits=5, random_state=0, shuffle=True),
             estimator=Pipeline(steps=[('scaler', StandardScaler()),
                                       ('ridge',
                                        ElasticNet(alpha=10000000000.0,
                                                   l1_ratio=0))]),
             param_grid={'ridge__alpha': array([2.22093791e+05, 1.76005531e+05,
  1.39481373e+05, 1.10536603e+05,
        8.75983676e+04, 6.94202082e+04, 5.50143278e+04, 4.35979140e+04,
        3.45506012e+04, 2.73807606…
        4.67486141e-03, 3.70474772e-03, 2.93594921e-03, 2.32668954e-03,
        1.84386167e-03, 1.46122884e-03, 1.15799887e-03, 9.17694298e-04,
        7.27257037e-04, 5.76338765e-04, 4.56738615e-04, 3.61957541e-04,
        2.86845161e-04, 2.27319885e-04, 1.80147121e-04, 1.42763513e-04,
        1.13137642e-04, 8.96596467e-05, 7.10537367e-05, 5.63088712e-05,
        4.46238174e-05, 3.53636122e-05, 2.80250579e-05, 2.22093791e-05])})
```

Finally, let's plot the results for cross-validated R2.

```
[47]: r2_fig, ax = subplots(figsize=(8,8))
      ax.errorbar(-np.log(lambdas),
      grid_r2.cv_results_['mean_test_score'],
      yerr=grid_r2.cv_results_['std_test_score'] / np.sqrt(K)
      )
      ax.set_xlabel('$-\log(\lambda)$', fontsize=20)
      ax.set_ylabel('Cross-validated $R^2$', fontsize=20);
```
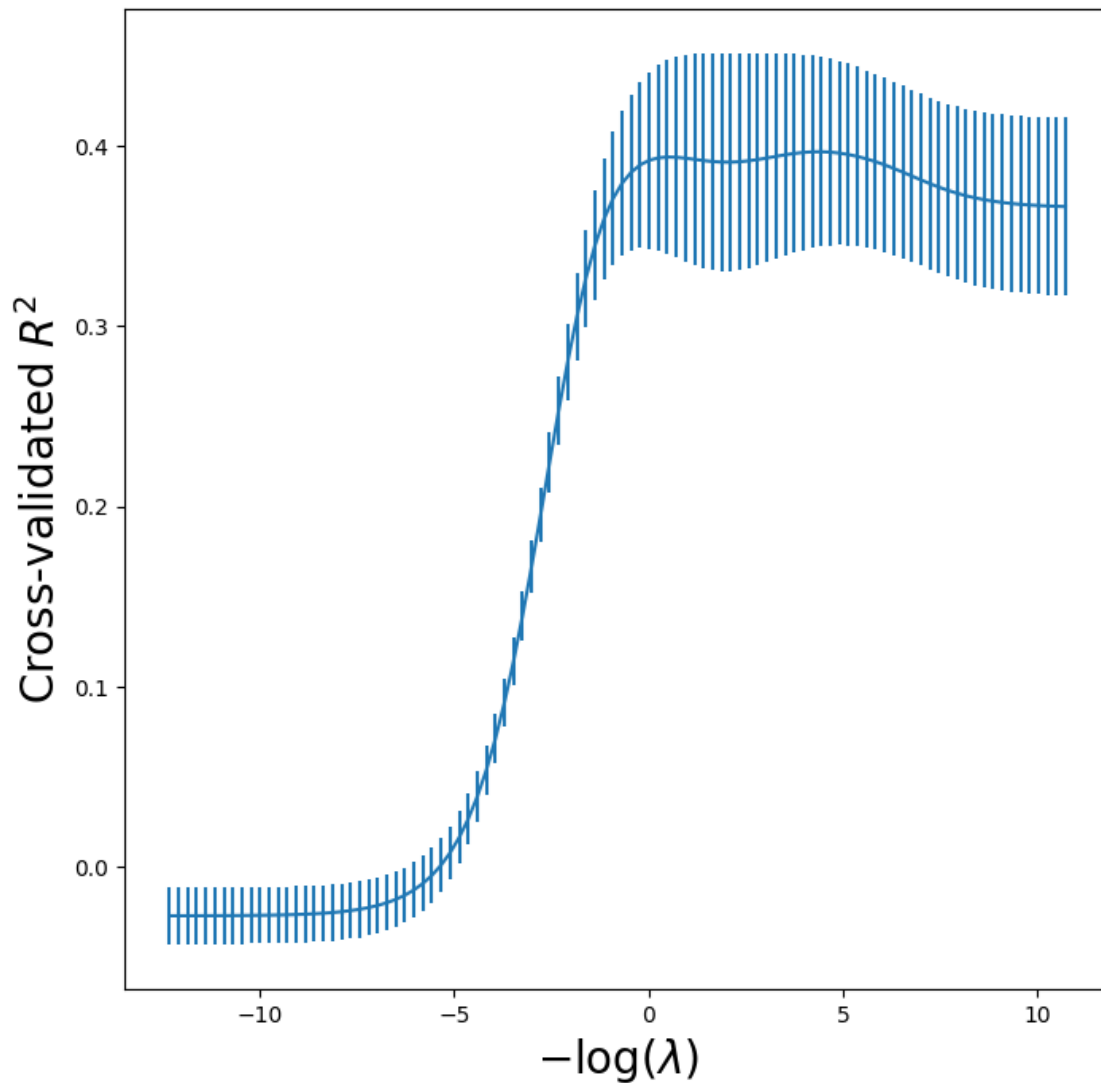

0.3.3 Fast Cross-Validation for Solution Paths

The ridge, lasso, and elastic net can be efciently ft along a sequence of values, creating what is known as a solution path or regularization path. Hence there is specialized code to ft such paths,

and to choose a suitable value of   using cross-validation. Even with identical splits the results will not agree exactly with our grid above because the standardization of each feature in grid is carried out on each fold, while in pipeCV below it is carried out only once. Nevertheless, the results are similar as the normalization is relatively stable across folds.

```
[48]: ridgeCV = skl.ElasticNetCV(alphas=lambdas,
      l1_ratio=0,
      cv=kfold)
      pipeCV = Pipeline(steps=[('scaler', scaler),
                               ('ridge', ridgeCV)])
      pipeCV.fit(X, Y)
```

C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18795326.355502333, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18795268.885511458, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18795196.367825005, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-

```
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18795104.862821113, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18794989.399687696, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18794843.706650957, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18794659.87071198, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18794427.908521358, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18794135.22526347, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18793765.932449568, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18793299.98803079, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18792712.112872534, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18791970.425932087, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18791034.72591697, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18789854.32913581, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18788365.350956466, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18786487.290938053, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18784118.748442672, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18781132.05553399, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18777366.566605024, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18772620.289297033, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18766639.479676694, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 18759105.758860495, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18749620.243803147, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18737684.132153213, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18722675.157982755, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18703819.37168406, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 18680157.84067929, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 18650508.189617783, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 18613421.503628485, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 18567136.14871325, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 18509531.699850053, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.

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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18438088.608600505, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18349862.649110064, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18241487.557216965, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18109224.25083878, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17949079.523028806, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17757018.994714484, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17529294.98190815, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17262895.457700975, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16956091.882983487, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16609021.736273041, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16224194.650997939, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15806778.142363882, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15364525.127389483, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14907268.751873784, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 14446023.624531083, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13991857.160644893, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13554773.727504015, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13142847.182203237, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12761747.456957735, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12414679.232309293, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12102642.724649904, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11824874.692517474, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11579334.506306283, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11363143.416382998, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11172936.696242273, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11005127.926431663, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10856105.032984471, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10722381.625233028, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10600721.735570507, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10488247.552619562, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10382531.681050954, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10281669.161078608, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10184320.545404708, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10089716.550599037, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9997617.850835908, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9908230.155360855, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9822083.085401142, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9739888.930170633, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 9662401.666184679, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9590296.226307346, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9524082.85469918, tolerance: 3759.109166869193
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9464062.902306667, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9410323.196208797, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9362759.02499177, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9321112.753117569, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9285016.290065093, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9254029.62739596, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9227672.214767978, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9205447.274608873, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9186860.578098059, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9171435.130133238, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9158722.527650267, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9148311.19139634, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9139831.5020216, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9132958.01205527, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9127409.145408668, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9122944.972944388, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9119363.705526633, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9116497.490587842, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9114207.98083443, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9112382.008592682, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9110927.57564812, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 9109770.269829705, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9108850.148759937, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9108119.084912017, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9107538.53896929, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9107077.714961948, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9106712.046135841, tolerance: 3759.109166869193
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21005651.632865306, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21005578.608102247, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21005486.463074777, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21005370.19205973, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21005223.479172513, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21005038.355660338, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21004804.767673362, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21004510.031200465, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21004138.14482845, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

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is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21003668.923421208, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21003076.90634522, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21002329.982031543, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21001387.65590972, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21000198.870418202, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20998699.263121385, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20996807.721073624, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20994422.055523295, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20991413.579895973, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 20987620.32492143, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20982838.5673385, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20976812.283196617, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20969220.06525303, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20959658.97086372, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

```
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20947624.701018076, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20932487.468798276, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20913462.92360354, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20889577.599545896, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20859628.619844183, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20822137.913488377, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20775302.12605423, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20716940.9171801, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20644448.64953633, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20554757.795455977, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20444326.81564956, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20309170.595644105, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20144956.942570165, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19947196.30888793, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19711550.60461546, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19434276.168588597, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19112791.02367708, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18746315.497629642, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18336483.41657882, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 17887774.829635464, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17407607.148839284, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16905965.499829996, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16394560.802096754, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15885645.943152795, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15390736.734407006, tolerance: 4201.186103419479
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14919517.257852774, tolerance: 4201.186103419479
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14479140.71584339, tolerance: 4201.186103419479
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14074002.01810338, tolerance: 4201.186103419479
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13705921.51267745, tolerance: 4201.186103419479
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13374594.126102064, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13078142.079861479, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12813645.639316054, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12577583.791150967, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12366168.387483235, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 12175587.278453063, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 12002182.95826825, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 11842589.470659979, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 11693840.031875879, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 11553447.608003628, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11419454.0438313, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11290441.388440892, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11165501.742342347, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11044168.420816427, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 10926319.289729476, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10812069.210340923, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10701669.40343593, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10595426.714498505, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10493648.013477517, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10396608.20305664, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10304536.713965934, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10217616.440012114, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10135989.092876745, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10059761.060748873, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9989004.697692173, tolerance: 4201.186103419479
    model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9923752.620593801, tolerance: 4201.186103419479
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9863986.795334771, tolerance: 4201.186103419479
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9809627.88419498, tolerance: 4201.186103419479
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9760531.052715551, tolerance: 4201.186103419479
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9716491.487344276, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9677258.0653158, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9642549.951166341, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9612070.387834951, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9585514.488134604, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9562571.50090841, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9542924.549680946, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9526251.156758904, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9512226.472532885, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 9500529.267319433, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9490849.431707181, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9482895.334900498, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9476399.717816744, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9471123.439398294, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

```
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9466857.004636273, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9463420.208447253, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9460660.409302272, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9458449.957484161, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9456683.220357953, tolerance: 4201.186103419479
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22331946.256290548, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22331864.01867821, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22331760.24858137, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22331629.308755424, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22331464.086506, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22331255.6077477, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22330992.5502474, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22330660.629798386, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22330241.826283135, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22329713.408067036, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22329046.70250113, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22328205.54698371, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22327144.33841677, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22325805.57825301, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 22324116.78479917, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22321986.61304197, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22319299.983932897, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22315911.978743475, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22311640.19886971, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22306255.22683996, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22299468.750693012, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22290918.833475474, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22280151.727477487, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22266599.55907775, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22249553.1628005, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22228129.352925844, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22201232.036903113, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22167506.872833706, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22125289.765747745, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22072550.54212509, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22006834.845984124, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21925209.90626917, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21824223.566299047, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21699890.949228805, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21547729.12461406, tolerance: 4466.452064951528
   model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21362866.213577304, tolerance: 4466.452064951528
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21140255.446179494, tolerance: 4466.452064951528
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20875023.139756173, tolerance: 4466.452064951528
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
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Duality gap: 20562967.323417887, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20201195.56502676, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19788844.32939184, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19327763.897510033, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18823001.043133005, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

```
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18282896.084610447, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17718660.488698892, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17143422.403240785, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16570887.230051233, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16013892.090309365, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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```

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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15483171.861886723, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14986579.12958808, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14528848.289413733, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14111836.239774445, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13735069.935277345, tolerance: 4466.452064951528
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13396407.639332807, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13092660.916831594, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12820093.90034468, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12574781.909222186, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12352853.175078174, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12150651.369793262, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11964850.85477174, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11792543.263225012, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11631302.416094312, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 11479227.756127875, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11334963.0417378, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11197685.003164075, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11067056.224580342, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10943139.511030324, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10826278.220752921, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10716956.34154929, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10615659.187064586, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10522756.819316017, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10438426.844454829, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10362623.27115222, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10295087.381795188, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10235388.466414612, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10182978.741141036, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10137247.95260459, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10097567.74892241, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10063321.789749233, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10033922.65639277, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10008819.48683393, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9987500.64529039, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9969494.453324014, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9954369.324796747, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9941733.515465427, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9931234.335989246, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
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Duality gap: 9922556.77745773, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9915421.679109665, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9909583.627876574, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9904828.718920853, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9900972.216495663, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9897856.106707249, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9895346.54085595, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9893331.20375508, tolerance: 4466.452064951528
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Coordinate descent without L1 regularization may lead to unexpected results and
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9891716.674948137, tolerance: 4466.452064951528
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9890425.865192672, tolerance: 4466.452064951528
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9889395.604662199, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9888574.440116873, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9887920.674489498, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9887400.660169432, tolerance: 4466.452064951528
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22225193.804080117, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22225110.813517082, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22225006.09337399, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22224873.95483671, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22224707.22016198, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22224496.833220948, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22224231.36831537, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22223896.410779055, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22223473.776030328, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22222940.5251543, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 22222267.724341698, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22221418.88207673, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22220347.9812255, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22218997.002387542, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22217292.809172485, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22215143.23447737, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22212432.168317873, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22209013.401268236, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22204702.92221979, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22199269.304569554, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22192421.741654065, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22183795.212587878, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22172932.179096937, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22159260.143049646, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22142064.352031756, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22120454.958092026, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22093328.063342046, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22059320.403233733, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22016758.038453568, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21963600.508906875, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
```

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21897383.654785756, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21815166.968429703, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21713495.12352233, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21588388.30984887, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 21435381.888817243, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21249641.65996919, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21026184.50512314, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20760231.6556524, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20447708.311673798, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20085874.018901832, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19674021.850113414, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19214128.305344213, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18711289.424232323, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18173771.01440588, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17612557.629344452, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17040407.03219555, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16470567.131662402, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15915425.819018759, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15385384.271481352, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 14888160.528800266, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 14428585.410549464, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 14008814.608291931, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 13628800.43657367, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 13286857.361730728, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12980197.224087037, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12705370.410345279, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12458600.90335749, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12236032.779575108, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 12033913.49389704, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11848733.59673176, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11677333.403468851, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11516981.070353968, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11365424.704670578, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11220921.203073837, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11082243.920528824, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10948669.457422748, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10819942.016223643, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10696213.317397844, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10577957.54613182, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10465864.12592968, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10360715.842557473, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10263264.873279948, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10174122.558233742, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10093678.084935224, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10022055.909584604, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9959113.332252622, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9904471.381944938, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9857566.988895476, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9817713.47931879, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9784158.875563027, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9756135.429395704, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9732897.547924127, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 9713747.933154231, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9698053.284847254, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9685251.610393517, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9674853.346299421, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9666438.32808142, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9659650.291030077, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9654190.159247102, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9649808.97719914, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9646301.012972359, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9643497.331329893, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9641259.984844062, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9639476.879484972, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9638057.315691965, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9636928.172690975, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9636030.68425902, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9635317.743812406, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9634751.672914699, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9634302.388158638, tolerance: 4445.102149685069
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22182535.705905356, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22182443.317481518, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22182326.738805093, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22182179.636849392, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22181994.02104498, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22181759.809716657, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 22181464.28327084, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22181091.394644808, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22180620.89990635, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22180027.262331232, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22179278.27131425, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22178333.30250968, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22177141.126954913, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22175637.153777495, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22173739.962460287, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22171346.945451476, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22168328.83898361, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22164522.86814138, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22159724.170510706, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22153675.090679437, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22146051.856030267, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22136448.05522981, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22124354.25056622, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22109132.97552026, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22089988.320511375, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22065929.327634353, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 22035726.555516466, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21997861.524512578, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21950469.43740474, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21891276.769023743, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 21817537.26021438, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21725972.804210078, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21612729.92224465, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21473368.081082568, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21302902.69437746, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 21095932.158423115, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20846882.28627312, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20550398.911674745, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 20201904.6391808, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19798303.254432596, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.

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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 19338763.6031726, tolerance: 4436.577708196866
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18825451.629099544, tolerance: 4436.577708196866
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 18264026.30393325, tolerance: 4436.577708196866
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17663705.112665195, tolerance: 4436.577708196866
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 17036766.859036848, tolerance: 4436.577708196866
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 16397496.223623442, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15760744.921491839, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15140415.226936523, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 14548197.66197112, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 13992801.316187326, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13479749.37491831, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13011650.716625066, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12588761.53615132, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12209637.009462342, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 11871722.016013257, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11571805.127380028, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11306328.206388846, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11071585.798533628, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10863860.41976853, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10679529.969990524, tolerance: 4436.577708196866
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10515164.967978265, tolerance: 4436.577708196866
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10367617.395431112, tolerance: 4436.577708196866
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10234094.93250862, tolerance: 4436.577708196866
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10112213.557229068, tolerance: 4436.577708196866
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10000024.235755343, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9896012.571054637, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9799072.61456212, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9708457.89030803, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9623714.619163364, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9544604.253487464, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9471024.212762393, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9402936.228999583, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9340310.144654684, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 9283087.298596587, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9231162.854348801, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9184382.359520586, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9142546.02475375, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9105415.114890277, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 9072717.557093358, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9044152.703403354, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9019396.685310092, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8998109.575324753, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8979944.333787005, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8964556.38739482, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8951612.36953345, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8940797.002727326, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8931817.82204559, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8924407.976697788, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8918327.548499117, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8913363.779400678, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8909330.473244963, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8906066.743651671, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8903435.248435402, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 8901320.056409517, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 8899624.301448222, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 8898267.772619095, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 8897184.565959156, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 8896320.890153034, tolerance: 4436.577708196866
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8895633.083483445, tolerance: 4436.577708196866
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8895085.869018307, tolerance: 4436.577708196866
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.271e+07, tolerance: 5.332e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
   model = cd_fast.enet_coordinate_descent(
```

[48]: Pipeline(steps=[('scaler', StandardScaler()),
                 ('ridge',
                  ElasticNetCV(alphas=array([2.22093791e+05, 1.76005531e+05,
    1.39481373e+05, 1.10536603e+05,
          8.75983676e+04, 6.94202082e+04, 5.50143278e+04, 4.35979140e+04,
          3.45506012e+04, 2.73807606e+04, 2.16987845e+04, 1.71959156e+04,
          1.36274691e+04, 1.07995362e+04, 8.55844774e+03, 6.78242347e+03,
          5.37495461e+03, 4.25955961e+03,…
          1.84386167e-03, 1.46122884e-03, 1.15799887e-03, 9.17694298e-04,
          7.27257037e-04, 5.76338765e-04, 4.56738615e-04, 3.61957541e-04,
          2.86845161e-04, 2.27319885e-04, 1.80147121e-04, 1.42763513e-04,
          1.13137642e-04, 8.96596467e-05, 7.10537367e-05, 5.63088712e-05,
          4.46238174e-05, 3.53636122e-05, 2.80250579e-05, 2.22093791e-05]),
                              cv=KFold(n_splits=5, random_state=0,
   shuffle=True),
                              l1_ratio=0))])

Let's produce a plot again of the cross-validation error to see that it is similar to using
skm.GridSearchCV.

```
[49]:  tuned_ridge = pipeCV.named_steps['ridge']
       ridgeCV_fig, ax = subplots(figsize=(8,8))
       ax.errorbar(-np.log(lambdas),
       tuned_ridge.mse_path_.mean(1),
       yerr=tuned_ridge.mse_path_.std(1) / np.sqrt(K))
       ax.axvline(-np.log(tuned_ridge.alpha_), c='k', ls='--')
       ax.set_ylim([50000,250000])
       ax.set_xlabel('$-\log(\lambda)$', fontsize=20)
       ax.set_ylabel('Cross-validated MSE', fontsize=20);
```
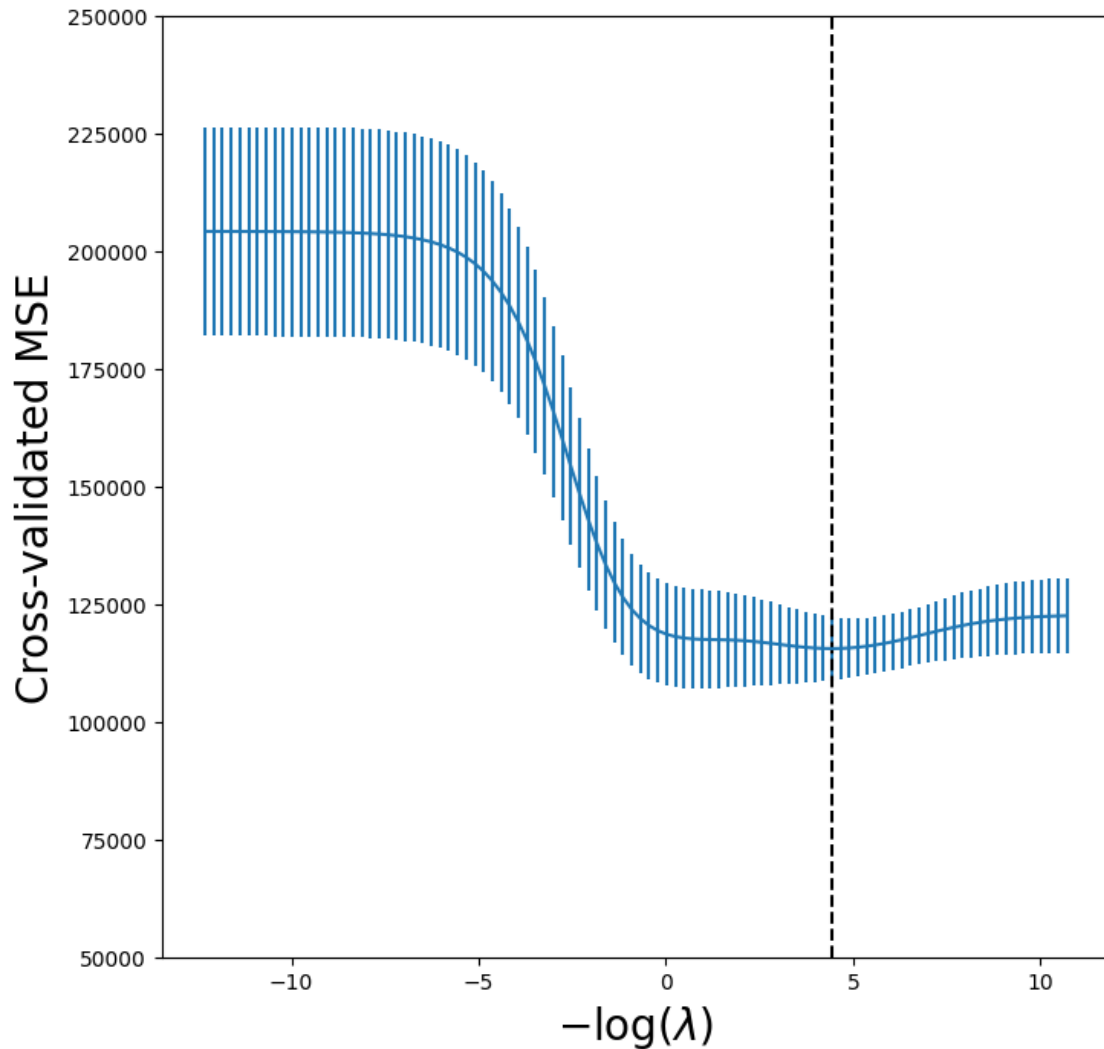

We see that the value of that results in the smallest cross-validation error is 1.19e-02, available as the value tuned_ridge.alpha_. What is the test MSE associated with this value of ?

```
[50]:  np.min(tuned_ridge.mse_path_.mean(1))
```

```
[50]: 115526.70630987761
```

This represents a further improvement over the test MSE that we got using = 4. Finally, tuned_ridge.coef__ has the coefcients ft on the entire data set at this value of .

```
[51]: tuned_ridge.coef_
```

```
[51]: array([-222.80877051,  238.77246614,    3.21103754,   -2.93050845,
              3.64888723,  108.90953869,  -50.81896152, -105.15731984,
            122.00714801,   57.1859509 ,  210.35170348,  118.05683748,
           -150.21959435,   30.36634231,  -61.62459095,   77.73832472,
             40.07350744,  -25.02151514,  -13.68429544])
```

As expected, none of the coefcients are zero—ridge regression does not perform variable selection

0.3.4 Evaluating Test Error of Cross-Validated Ridge

Choosing   using cross-validation provides a single regression estimator, similar to ftting a linear regression model as we saw in Chapter 3. It is therefore reasonable to estimate what its test error is. We run into a problem here in that cross-validation will have touched all of its data in choosing , hence we have no further data to estimate test error. A compromise is to do an initial split of the data into two disjoint sets: a training set and a test set. We then ft a cross-validation tuned ridge regression on the training set, and evaluate its performance on the test set. We might call this cross-validation nested within the validation set approach. A priori there is no reason to use half of the data for each of the two sets in validation. Below, we use 75% for training and 25% for test, with the estimator being ridge regression tuned using 5-fold cross-validation. This can be achieved in code as follows:

```
[52]: outer_valid = skm.ShuffleSplit(n_splits=1,
      test_size=0.25,
      random_state=1)
      inner_cv = skm.KFold(n_splits=5,
      shuffle=True,
      random_state=2)
      ridgeCV = skl.ElasticNetCV(alphas=lambdas,
      l1_ratio=0,
      cv=inner_cv)
      pipeCV = Pipeline(steps=[('scaler', scaler),
      ('ridge', ridgeCV)]);
```

```
[53]: results = skm.cross_validate(pipeCV,
      X,
      Y,
      cv=outer_valid,
      scoring='neg_mean_squared_error')
      -results['test_score']
```

C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:

```
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16002961.89304734, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16002909.292721536, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16002842.919898542, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16002759.168901473, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16002653.490324108, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16002520.144170541, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16002351.888507722, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16002139.586836113, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16001871.713040238, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 16001533.72733189, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16001107.289774053, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16000569.269442711, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15999890.496647637, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15999034.192416638, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15997953.993094176, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15996591.467783947, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15994873.001788346, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15992705.889472546, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15989973.444502642, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15986528.893835299, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15982187.774395376, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15976718.499356631, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15969830.707495736, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15961160.960501967, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15950255.32070595, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15936548.344581455, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15919338.096469928, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15897756.970098713, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15870738.473491091, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15836980.785622947, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15794908.96193258, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15742639.305781402, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15677951.783964384, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
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Duality gap: 15598279.52021635, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15500728.213326862, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15382142.225333134, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15239236.776243076, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15068814.890988706, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14868080.263148531, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14635039.685599193, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14368959.698660215, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14070805.238626322, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13743554.881437782, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13392276.560592553, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13023877.880913062, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12646520.933576021, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12268792.343592057, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11898803.09555935, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11543417.930918131, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11207766.718773343, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10895093.611569965, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10606899.312997254, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10343266.88124089, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10103247.353431454, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9885208.910573516, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9687100.478192499, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9506625.781409392, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 9341352.903950272, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9188793.402093252, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9046478.453631112, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8912045.904589213, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8783339.107432568, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8658509.901020303, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8536113.82811371, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8415183.975072213, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8295269.742745503, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8176429.120013417, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.

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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8059168.829305593, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7944335.999206935, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7832975.645216376, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7726176.61494724, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7624931.461247072, tolerance: 3200.6325551004934
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7530031.627469368, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7442009.746564731, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7361129.146973427, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7287410.6353364345, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7220681.095616992, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
```

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7160628.395404383, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7106851.483766001, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7058900.769700891, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7016308.880857986, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 6978613.91177754, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6945376.5710275285, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6916191.049528645, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6890688.792445807, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6868535.393320359, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6849422.765040111, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6833060.050953469, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6819166.544534265, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6807468.458908793, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6797699.628345456, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6789604.944998261, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6782944.868629558, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6777499.565630903, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6773071.79155434, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6769488.209513169, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6766599.256782832, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6764277.892212801, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6762417.616248522, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6760930.1169685805, tolerance: 3200.6325551004934
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15173612.824876543, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15173560.331518074, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15173494.093703298, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15173410.513116254, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15173305.049649917, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
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Duality gap: 15173171.97505981, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15173004.062268816, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15172792.193566972, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15172524.866617762, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15172187.571748767, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15171762.007200053, tolerance: 3034.7626598069205
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15171225.090500392, tolerance: 3034.7626598069205
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15170547.713543424, tolerance: 3034.7626598069205
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15169693.17577188, tolerance: 3034.7626598069205
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15168615.213598883, tolerance: 3034.7626598069205
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15167255.524179867, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15165540.65722486, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15163378.119038213, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15160651.49782194, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15157214.37819171, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15152882.766135199, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15147425.694698604, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15140553.628850501, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15131904.241777303, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15121025.105980717, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15107352.850599293, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15090188.412868414, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15068668.205066577, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15041731.400110116, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 15008084.208955992, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14966163.110870238, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14914100.65384474, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14849699.805850957, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14770425.96115128, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 14673429.416906543, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 14555614.81501597, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 14413776.349016692, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 14244816.178940998, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 14046055.366934758, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.

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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13815628.708094306, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13552926.205683712, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13259008.940702375, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12936897.573228313, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12591625.616217319, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12229982.920676826, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11859948.802383406, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11489906.860316701, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11127805.377401607, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10780443.144435262, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10453012.587348035, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10148944.578529166, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9870012.667698368, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9616601.23067291, tolerance: 3034.7626598069205
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 9388032.941233689, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9182876.289070563, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8999193.791535858, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8834727.194341872, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8687036.347689675, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8553612.383287696, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8431979.280234506, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8319788.946660175, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8214909.054690698, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8115501.10564307, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8020086.355249529, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7927596.538468557, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7837403.822275489, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7749321.535335524, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7663566.802084764, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 7580680.550684205, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 7501409.564666598, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 7426566.500521849, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 7356892.24216273, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 7292946.117484955, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7235042.041596966, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7183235.551674312, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7137353.553695869, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7097050.34845655, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
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Duality gap: 7061872.012726598, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7031315.123405524, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7004872.089238563, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6982061.1230358975, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6962442.578609905, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6945624.890074133, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6931263.466326933, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6919055.476661759, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6908732.9775390485, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6900056.292042837, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6892808.858171583, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6886793.977603496, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6881833.233569011, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6877765.974988934, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6874449.207170511, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6871757.386867892, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6869581.8539129635, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6867829.8388526775, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6866423.119345357, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6865296.456501576, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6864395.94700256, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6863677.4026523745, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6863104.835000041, tolerance: 3034.7626598069205
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16000126.775776317, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 16000067.997791685, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15999993.829780784, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15999900.24258462, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15999782.152469942, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15999633.145271106, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15999445.12846794, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15999207.89243054, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15998908.557207119, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15998530.875140414, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15998054.351968955, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15997453.139532344, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15996694.641307212, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15995737.757220384, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15994530.675893761, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15993008.099962443, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15991087.762599913, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15988666.06009735, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15985612.585588468, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15981763.302383823, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15976912.04209659, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
```

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15970799.954194363, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15963102.473251346, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15953413.314912455, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15941224.973906958, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 15925905.198558562, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15906668.99042816, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15882545.878220893, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15852342.621036038, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15814602.219371138, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15767561.301116718, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15709109.781098891, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15636759.341258612, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15547630.840385435, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15438475.105455771, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15305746.074655257, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15145748.542592406, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14954882.273867266, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14729996.363846606, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14468848.510940226, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14170631.317143813, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13836485.361873373, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13469879.089990828, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13076719.754361458, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12665089.799378188, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12244586.676668115, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11825360.363691228, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11417044.801169302, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11027817.64570279, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 10663776.910200799, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10328716.267595595, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10024263.647837926, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9750266.81973182, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9505284.688773442, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9287065.610720852, tolerance: 3200.070250165818
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9092940.776433399, tolerance: 3200.070250165818
    model = cd_fast.enet_coordinate_descent_gram(
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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8920108.266351506, tolerance: 3200.070250165818
    model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8765816.866835339, tolerance: 3200.070250165818
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8627473.905486986, tolerance: 3200.070250165818
    model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8502702.19610965, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8389365.458262948, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8285575.962199805, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8189695.129107317, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8100335.848355191, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

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Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8016371.6148043, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7936951.343980131, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7861511.843848018, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7789775.818775895, tolerance: 3200.070250165818
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7721724.491724864, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
```

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7657540.535692852, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7597526.506006034, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7542012.431576035, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7491270.13110697, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
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Duality gap: 7445449.741931578, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7404547.164364975, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7368402.734578201, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7336724.612267274, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7309126.908336963, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7285172.539342966, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7264413.026630405, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7246420.46547352, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7230809.549603119, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7217249.407961998, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7205466.2064128965, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7195238.325929949, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7186386.647781952, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7178762.875061199, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7172238.602284245, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7166697.001612088, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7162027.848205597, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7158125.584421412, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7154889.512672288, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7152225.06209662, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7150045.262096303, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7148271.88278419, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7146836.014641232, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7145678.080779795, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 7144747.393668632, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7144001.407092316, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7143404.805305724, tolerance: 3200.070250165818
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13766426.84442544, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13766379.012219733, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13766318.65599331, tolerance: 2753.3219034862304
    model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13766242.496938992, tolerance: 2753.3219034862304
    model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13766146.398082256, tolerance: 2753.3219034862304
    model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13766025.139807519, tolerance: 2753.3219034862304
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13765872.136748437, tolerance: 2753.3219034862304
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13765679.080773309, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13765435.490848664, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13765128.145612366, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13764740.368286433, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13764251.125810029, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13763633.89441395, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13762855.231859, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13761872.981721638, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13760634.016862668, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13759071.40694565, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13757100.867966292, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13754616.319689387, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13751484.339396803, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13747537.25769523, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 13742564.595583744, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13736302.494553428, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13728420.74910962, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13718507.024368448, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13706047.848124273, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 13690406.035690319, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 13670794.381086987, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 13646245.795015216, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 13615580.679837884, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 13577373.323622871, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.

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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13529920.608156208, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13471218.489805978, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13398954.581488006, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13310528.590455975, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13203115.797389355, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 13073790.981404452, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 12919729.112886172, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 12738491.873820402, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 12528392.75276841, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 12288907.120278116, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12021061.050642932, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11727704.457379242, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11413566.984203367, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11085024.381464425, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 10749570.986969214, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10415080.823900377, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10089009.138994664, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9777704.218602654, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9485957.15763935, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9216836.907742973, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8971777.23957061, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8750831.80632957, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8553002.845594905, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8376568.552591965, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8219365.993957059, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8079015.288983337, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7953088.944512339, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7839237.297915865, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7735280.817484573, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7639277.052384068, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7549567.214150205, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7464805.436922462, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7383972.203368438, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7306371.938584418, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7231613.973232689, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7159576.877369855, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7090358.567763269, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7024217.2241215715, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 6961509.172985431, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6902628.941757267, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6847954.742128403, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6797801.38852994, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6752382.798167876, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6711786.9446280915, tolerance: 2753.3219034862304
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6675965.981966927, tolerance: 2753.3219034862304
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6644742.448857527, tolerance: 2753.3219034862304
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6617829.550839502, tolerance: 2753.3219034862304
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6594860.867273604, tolerance: 2753.3219034862304
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6575423.588385692, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6559089.833983582, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6545442.225938015, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6534091.895329387, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6524688.873515911, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6516926.039701635, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6510538.426567708, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6505299.7780512525, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6501017.943079231, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 6497530.176477713, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6494698.902794301, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6492408.111473185, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6490560.333699428, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6489074.074242312, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 6487881.578697718, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6486926.85524411, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6486163.908028975, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6485555.163897252, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6485070.084972483, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6484683.961142681, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6484376.873671106, tolerance: 2753.3219034862304
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16123836.286658324, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16123762.414447507, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16123669.200043011, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16123551.579596583, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16123403.163871318, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16123215.891543614, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16122979.591935378, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16122681.433587793, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

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is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16122305.228986477, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16121830.558093365, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16121231.663752731, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16120476.060052723, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16119522.779778492, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16118320.168518292, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16116803.109996729, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16114889.538918184, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16112476.063036693, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 16109432.474341486, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16105594.879294187, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16100757.119470127, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16094660.087017834, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16086978.465806846, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

```
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16077304.353326885, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16065127.1490184, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16049809.047450975, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16030555.476241712, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 16006379.9118725, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15976062.75839428, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15938104.483596489, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15890674.114698276, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15831555.68606024, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 15758097.52534076, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15667172.578206714, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15555162.420748942, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15417983.02018205, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15251175.908593172, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 15050092.45331768, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14810198.17774659, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14527514.08283525, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 14199187.811678287, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 13824146.920817543, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 13403734.02728661, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12942174.869677963, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 12446711.65903124, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11927272.408043088, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 11395650.820912808, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10864314.587176831, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 10345084.699656615, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
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packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9847974.66461027, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 9380422.144947708, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8947015.008946374, tolerance: 3224.8236814135257
    model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8549670.258610569, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 8188124.101396991, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7860558.677097134, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7564216.251072432, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7295907.831051505, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 7052382.339382347, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6830565.953165644, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6627701.871803496, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6441421.548990736, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6269768.629955586, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(

```
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 6111186.722532644, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5964477.842252154, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5828739.876908947, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5703294.550898136, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

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Duality gap: 5587617.998651218, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5481282.987854629, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5383916.678079137, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5295172.882818883, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5214714.536832892, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

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packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5142200.898832, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5077274.992035659, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 5019549.57623576, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4968593.4449988585, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4923922.319001321, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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```

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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4884998.717484847, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4851242.938445754, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4822053.963705306, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4796836.339338466, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4775027.808895557, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
```

Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 4756122.7231915, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 4739687.533593342, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 4725366.495343643, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 4712877.711579455, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: UserWarning: Coordinate descent without L1 regularization may lead to unexpected results and is discouraged. Set l1_ratio > 0 to add L1 regularization.
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-packages\sklearn\linear_model_coordinate_descent.py:614: ConvergenceWarning: Objective did not converge. You might want to increase the number of iterations. Duality gap: 4702001.540622824, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(

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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4692564.77331921, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4684424.413915053, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4677454.213645068, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
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Coordinate descent without L1 regularization may lead to unexpected results and
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  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4671535.662147201, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
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C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
```

```
Duality gap: 4666553.581406458, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4662395.341810614, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4658952.253037918, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4656121.776081646, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4653809.600037618, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
```

```
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4651931.081491546, tolerance: 3224.8236814135257
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4650411.9059599675, tolerance: 3224.8236814135257
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4649188.052145888, tolerance: 3224.8236814135257
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4648205.237515778, tolerance: 3224.8236814135257
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4647418.038792008, tolerance: 3224.8236814135257
   model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: UserWarning:
Coordinate descent without L1 regularization may lead to unexpected results and
is discouraged. Set l1_ratio > 0 to add L1 regularization.
```

```
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:614: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations.
Duality gap: 4646788.852992688, tolerance: 3224.8236814135257
  model = cd_fast.enet_coordinate_descent_gram(
C:\Users\ankit19.gupta\Desktop\Self_Projects\ISLP\myenv\lib\site-
packages\sklearn\linear_model\_coordinate_descent.py:628: ConvergenceWarning:
Objective did not converge. You might want to increase the number of iterations,
check the scale of the features or consider increasing regularisation. Duality
gap: 1.153e+07, tolerance: 3.855e+03 Linear regression models with null weight
for the l1 regularization term are more efficiently fitted using one of the
solvers implemented in sklearn.linear_model.Ridge/RidgeCV instead.
  model = cd_fast.enet_coordinate_descent(
```

[53]: array([132393.84003227])

0.3.5 The Lasso

We saw that ridge regression with a wise choice of   can outperform least squares as well as the
null model on the Hitters data set. We now ask whether the lasso can yield either a more accurate
or a more interpretable model than ridge regression. In order to ft a lasso model, we once again
use the ElasticNetCV() function; however, this time we use the argument l1_ratio=1. Other than
that change, we proceed just as we did in ftting a ridge model.

```
[54]: lassoCV = skl.ElasticNetCV(n_alphas=100,l1_ratio=1,cv=kfold)
      pipeCV = Pipeline(steps=[('scaler', scaler),('lasso', lassoCV)])
      pipeCV.fit(X, Y)
      tuned_lasso = pipeCV.named_steps['lasso']
      tuned_lasso.alpha_
```

[54]: 3.1472370031649866

```
[56]: lambdas , soln_array = skl.Lasso.path(Xs,
      Y,
      l1_ratio=1,
      n_alphas=100)[:2]
      soln_path = pd.DataFrame(soln_array.T,
      columns=D.columns,
      index=-np.log(lambdas))
```
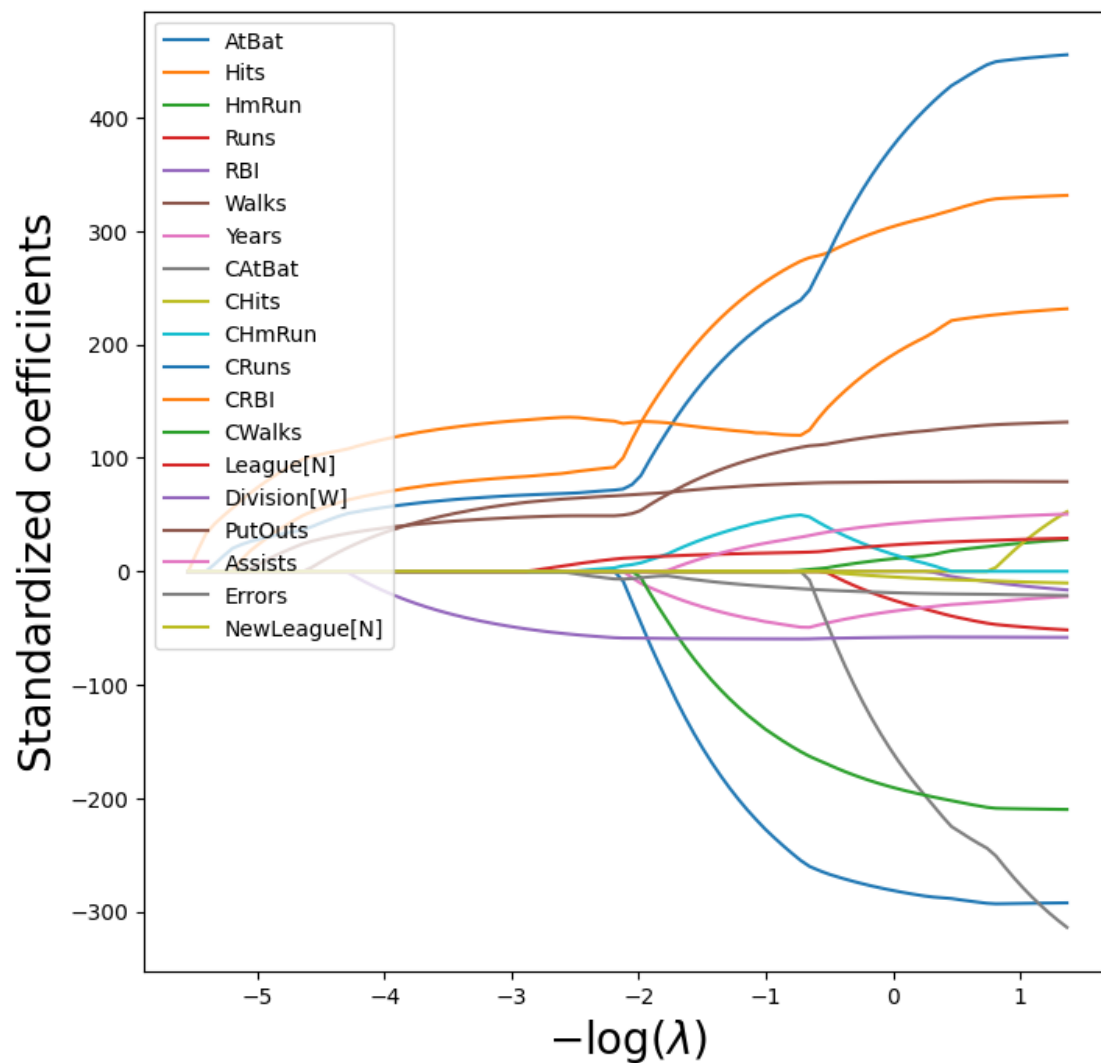
We can see from the coefcient plot of the standardized coefcients that depending on the choice of
tuning parameter, some of the coefcients will be exactly equal to zero.

```
[105]: path_fig, ax = subplots(figsize=(8,8))
       soln_path.plot(ax=ax, legend=False)
       ax.legend(loc='upper left')
       ax.set_xlabel('$-\log(\lambda)$', fontsize=20)
       ax.set_ylabel('Standardized coefficiients', fontsize=20);
```

The smallest cross-validated error is lower than the test set MSE of the null model and of least squares, and very similar to the test MSE of 115526.71 of ridge regression (page 278) with chosen by cross-validation

```
[106]: np.min(tuned_lasso.mse_path_.mean(1))
```
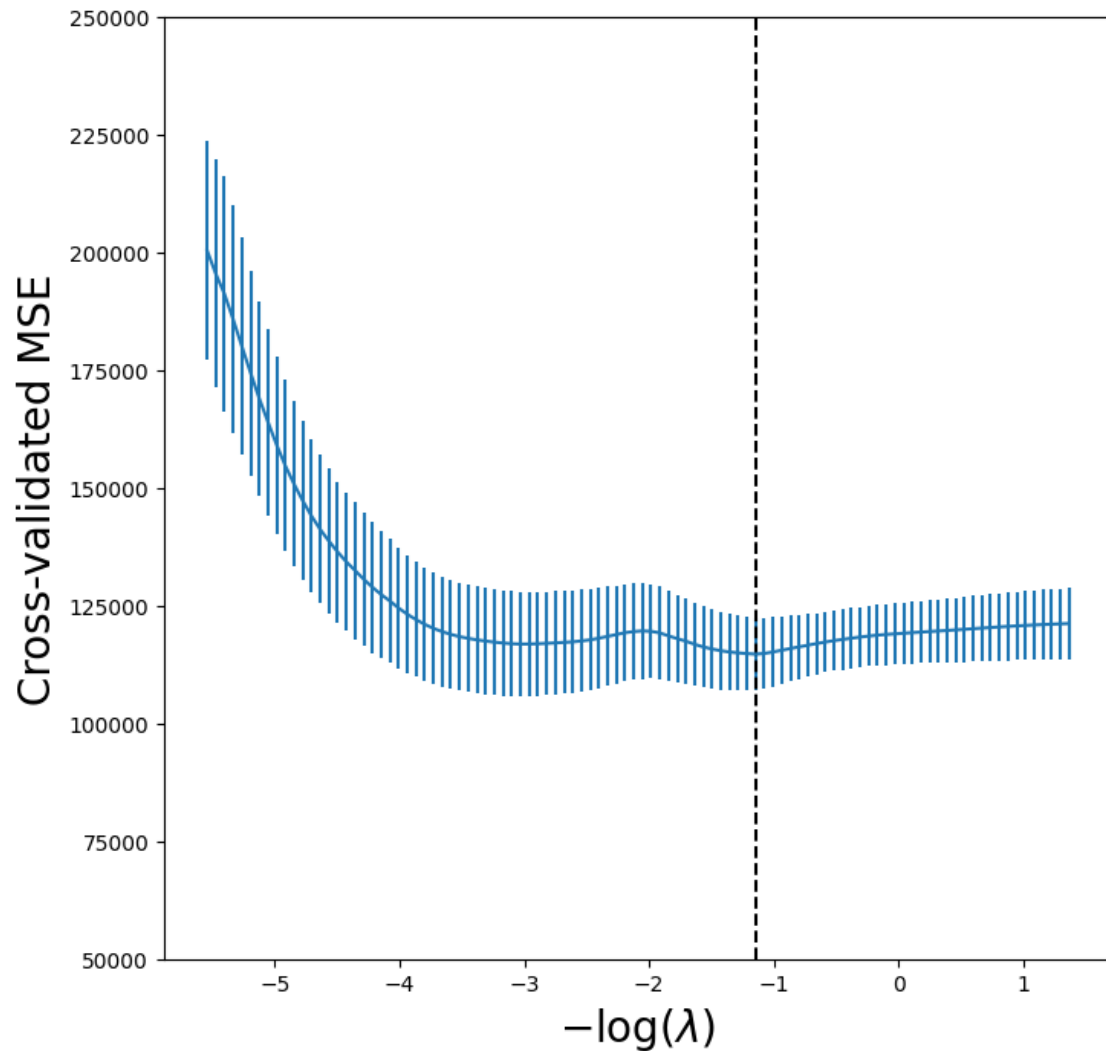
```
[106]: 114690.73118253658
```

Let's again produce a plot of the cross-validation error.

```
[107]: lassoCV_fig, ax = subplots(figsize=(8,8))
ax.errorbar(-np.log(tuned_lasso.alphas_),
tuned_lasso.mse_path_.mean(1),
yerr=tuned_lasso.mse_path_.std(1) / np.sqrt(K))
ax.axvline(-np.log(tuned_lasso.alpha_), c='k', ls='--')
```

```
ax.set_ylim([50000,250000])
ax.set_xlabel('$-\log(\lambda)$', fontsize=20)
ax.set_ylabel('Cross-validated MSE', fontsize=20);
```


However, the lasso has a substantial advantage over ridge regression in that the resulting coefcient estimates are sparse. Here we see that 6 of the 19 coefcient estimates are exactly zero. So the lasso model with   chosen by cross-validation contains only 13 variables.

```
[108]: tuned_lasso.coef_
```

```
[108]: array([-210.01008773,  243.4550306 ,    0.          ,    0.          ,
           0.          ,   97.69397357,  -41.52283116,   -0.          ,
           0.          ,   39.62298193,  205.75273856,  124.55456561,
        -126.29986768,   15.70262427,  -59.50157967,   75.24590036,
```

```
     21.62698014,  -12.04423675,   -0.        ])
```

As in ridge regression, we could evaluate the test error of cross-validated lasso by frst splitting into test and training sets and internally running cross-validation on the training set. We leave this as an exercise.

0.4 6.5.3 PCR and PLS Regression

0.4.1 Principal Components Regression

Principal components regression (PCR) can be performed using PCA() from the sklearn.decomposition module. We now apply PCR to the Hitters data, in order to predict Salary. Again, ensure that the missing values have been removed from the data, as described in Section 6.5.1.

We use LinearRegression() to ft the regression model here. Note that it fts an intercept by default, unlike the OLS() function seen earlier in Section 6.5.1.

```
[109]: pca = PCA(n_components=2)
       linreg = skl.LinearRegression()
       pipe = Pipeline([('pca', pca),
       ('linreg', linreg)])
       pipe.fit(X, Y)
       pipe.named_steps['linreg'].coef_
```

```
[109]: array([0.09846131, 0.4758765 ])
```

When performing PCA, the results vary depending on whether the data has been standardized or not. As in the earlier examples, this can be accomplished by including an additional step in the pipeline.

```
[110]: pipe = Pipeline([('scaler', scaler),
       ('pca', pca),
       ('linreg', linreg)])
       pipe.fit(X, Y)
       pipe.named_steps['linreg'].coef_
```

```
[110]: array([106.36859204, -21.60350456])
```

We can of course use CV to choose the number of components, by using skm.GridSearchCV, in this case fxing the parameters to vary the n_components.

```
[111]: param_grid = {'pca__n_components': range(1, 20)}
       grid = skm.GridSearchCV(pipe,
       param_grid,
       cv=kfold,
       scoring='neg_mean_squared_error')
       grid.fit(X, Y)
```

```
[111]: GridSearchCV(cv=KFold(n_splits=5, random_state=0, shuffle=True),
                     estimator=Pipeline(steps=[('scaler', StandardScaler()),
                                               ('pca', PCA(n_components=2)),
                                               ('linreg', LinearRegression())]),
                     param_grid={'pca__n_components': range(1, 20)},
                     scoring='neg_mean_squared_error')
```

Let's plot the results as we have for other methods.

```
[112]: pcr_fig, ax = subplots(figsize=(8,8))
       n_comp = param_grid['pca__n_components']
       ax.errorbar(n_comp,
       -grid.cv_results_['mean_test_score'],
       grid.cv_results_['std_test_score'] / np.sqrt(K))
       ax.set_ylabel('Cross-validated MSE', fontsize=20)
       ax.set_xlabel('# principal components', fontsize=20)
       ax.set_xticks(n_comp[::2])
       ax.set_ylim([50000,250000]);
```
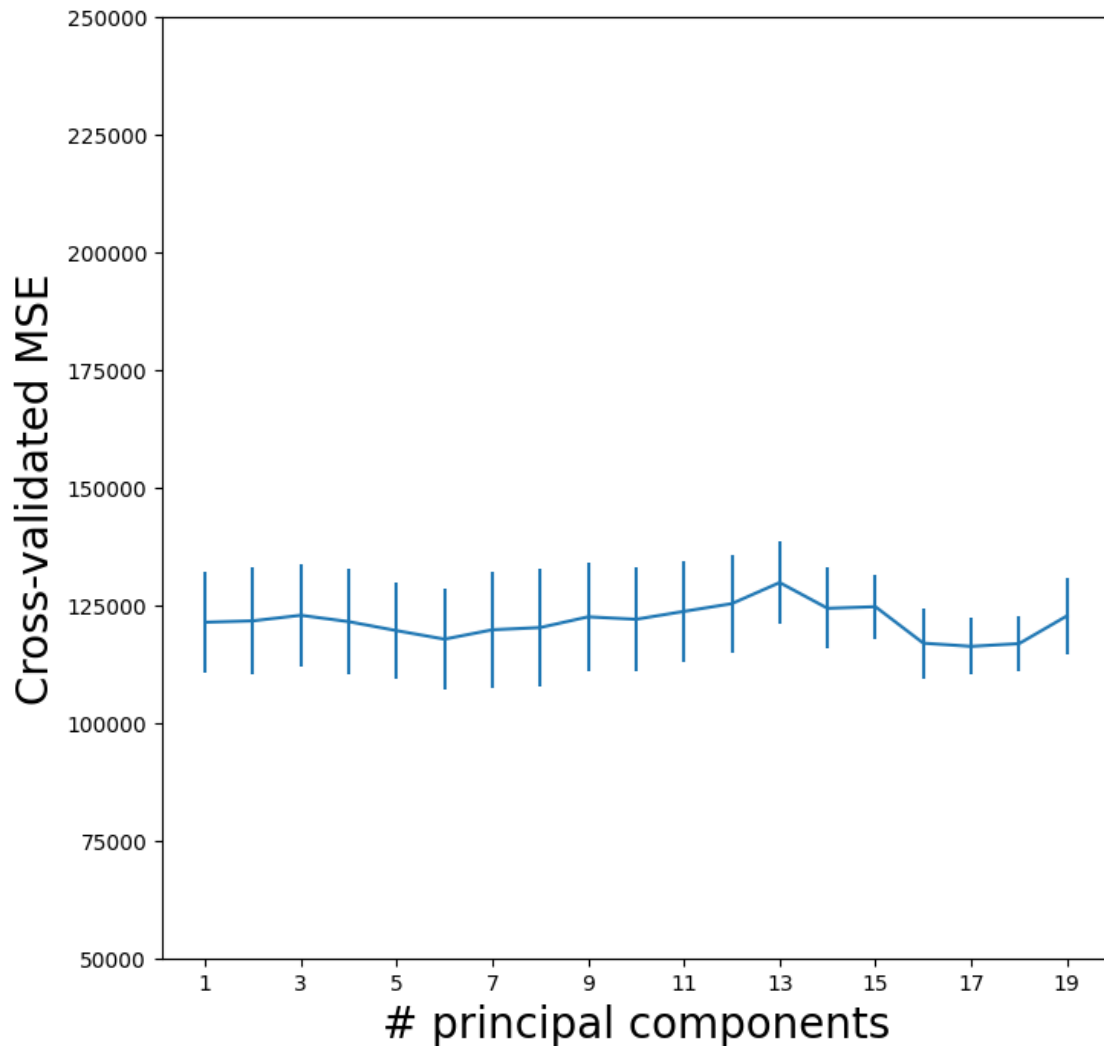
We see that the smallest cross-validation error occurs when 17 components are used. However, from the plot we also see that the cross-validation error is roughly the same when only one component is included in the model. This suggests that a model that uses just a small number of components might sufce.

The CV score is provided for each possible number of components from 1 to 19 inclusive. The PCA() method complains if we try to ft an intercept only with n_components=0 so we also compute the MSE for just the null model with these splits.

```
[113]:  Xn = np.zeros((X.shape[0], 1))
        cv_null = skm.cross_validate(linreg,Xn,
        Y,
        cv=kfold,
        scoring='neg_mean_squared_error')
        -cv_null['test_score'].mean()
```

```
[113]: 204139.30692994667
```

The explained_variance_ratio_ attribute of our PCA object provides the percentage of variance explained in the predictors and in the response using diferent numbers of components. This concept is discussed in greater detail in Section 12.2.

```
[114]: pipe.named_steps['pca'].explained_variance_ratio_
```

```
[114]: array([0.3831424 , 0.21841076])
```

Briefy, we can think of this as the amount of information about the predictors that is captured using M principal components. For example, setting M = 1 only captures 38.31% of the variance, while M = 2 captures an additional 21.84%, for a total of 60.15% of the variance. By M = 6 it increases to 88.63%. Beyond this the increments continue to diminish, until we use all M = p = 19 components, which captures all 100% of the variance.

0.4.2 Partial Least Squares

Partial least squares (PLS) is implemented in the PLSRegression() function.

```
[116]: pls = PLSRegression(n_components=2,
       scale=True)
       pls.fit(X, Y)
```

```
[116]: PLSRegression()
```

As was the case in PCR, we will want to use CV to choose the number of components.

```
[117]: param_grid = {'n_components':range(1, 20)}
       grid = skm.GridSearchCV(pls,
       param_grid,
       cv=kfold,
       scoring='neg_mean_squared_error')
       grid.fit(X, Y)
```

```
[117]: GridSearchCV(cv=KFold(n_splits=5, random_state=0, shuffle=True),
                    estimator=PLSRegression(),
                    param_grid={'n_components': range(1, 20)},
                    scoring='neg_mean_squared_error')
```

As for our other methods, we plot the MSE.

```
[118]: pls_fig, ax = subplots(figsize=(8,8))
       n_comp = param_grid['n_components']
       ax.errorbar(n_comp,
       -grid.cv_results_['mean_test_score'],
       grid.cv_results_['std_test_score'] / np.sqrt(K))
       ax.set_ylabel('Cross-validated MSE', fontsize=20)
       ax.set_xlabel('# principal components', fontsize=20)
       ax.set_xticks(n_comp[::2])
```

```
ax.set_ylim([50000,250000]);
```
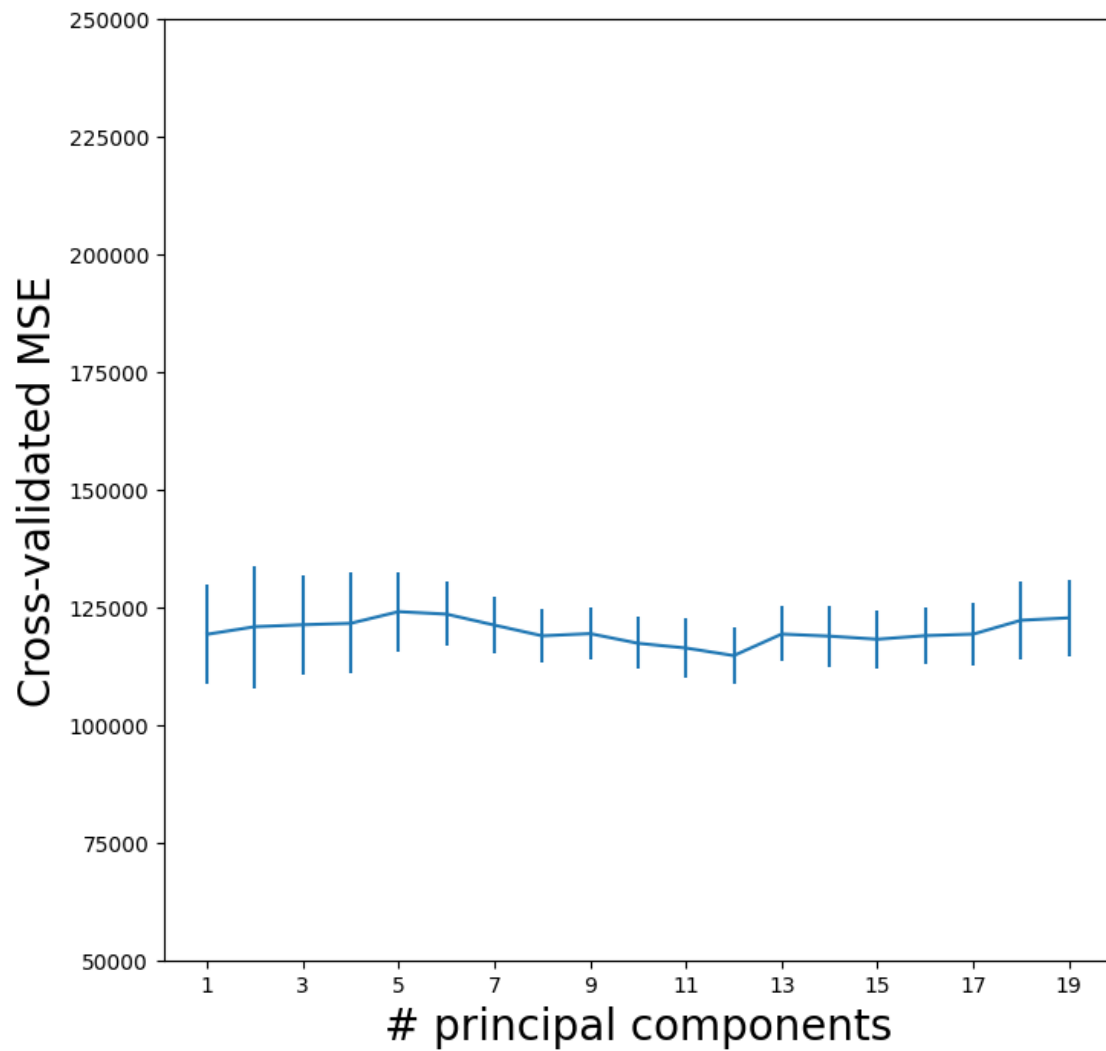

CV error is minimized at 12, though there is little noticable diference between this point and a much lower number like 2 or 3 components.

```
[ ]:
```