

Q1. Linear Regression (House Prices)

size_sqft	bedrooms	age_years	price
1200	2	5	250000
1500	3	10	350000
1000	1	2	200000
1800	4	15	400000
2000	3	8	450000

Tasks:

1. Build a Linear Regression model to predict `price` using the other features.
2. Evaluate the model using RMSE and R^2 metrics.

Q2. Ridge Regression (House Prices)

size_sqft	bedrooms	age_years	price
1200	2	5	250000
1500	3	10	350000
1000	1	2	200000
1800	4	15	400000
2000	3	8	450000

Tasks:

1. Implement Ridge Regression with $\alpha = 0.5$.
2. Compare RMSE and R^2 values with the Linear Regression model.

Q3. Lasso Regression (Sales Data)

ad_budget	social_media	sales
200	50	1000
300	70	1500
150	30	800
400	80	2000
250	60	1200

Tasks:

1. Develop a Linear Regression model for sales prediction.
2. Implement Lasso Regression with $\alpha = 0.1$.
3. Compare model performance using RMSE and R^2 .

Q4. Logistic Regression (Loan Approval)

income credit_score approved

50000	650	Yes
60000	700	Yes
30000	550	No
70000	720	Yes
40000	600	No

Tasks:

1. Train a Logistic Regression model to predict loan approval.
2. Generate a classification report (precision, recall, f1-score, accuracy).

Q5. KNN Classifier (Loan Approval)

income credit_score approved

50000	650	Yes
60000	700	Yes
30000	550	No
70000	720	Yes
40000	600	No

Tasks:

1. Train a KNN classifier with $K = 3$.
2. Generate a classification report (precision, recall, f1-score, accuracy).
3. Compare performance with the Logistic Regression model.