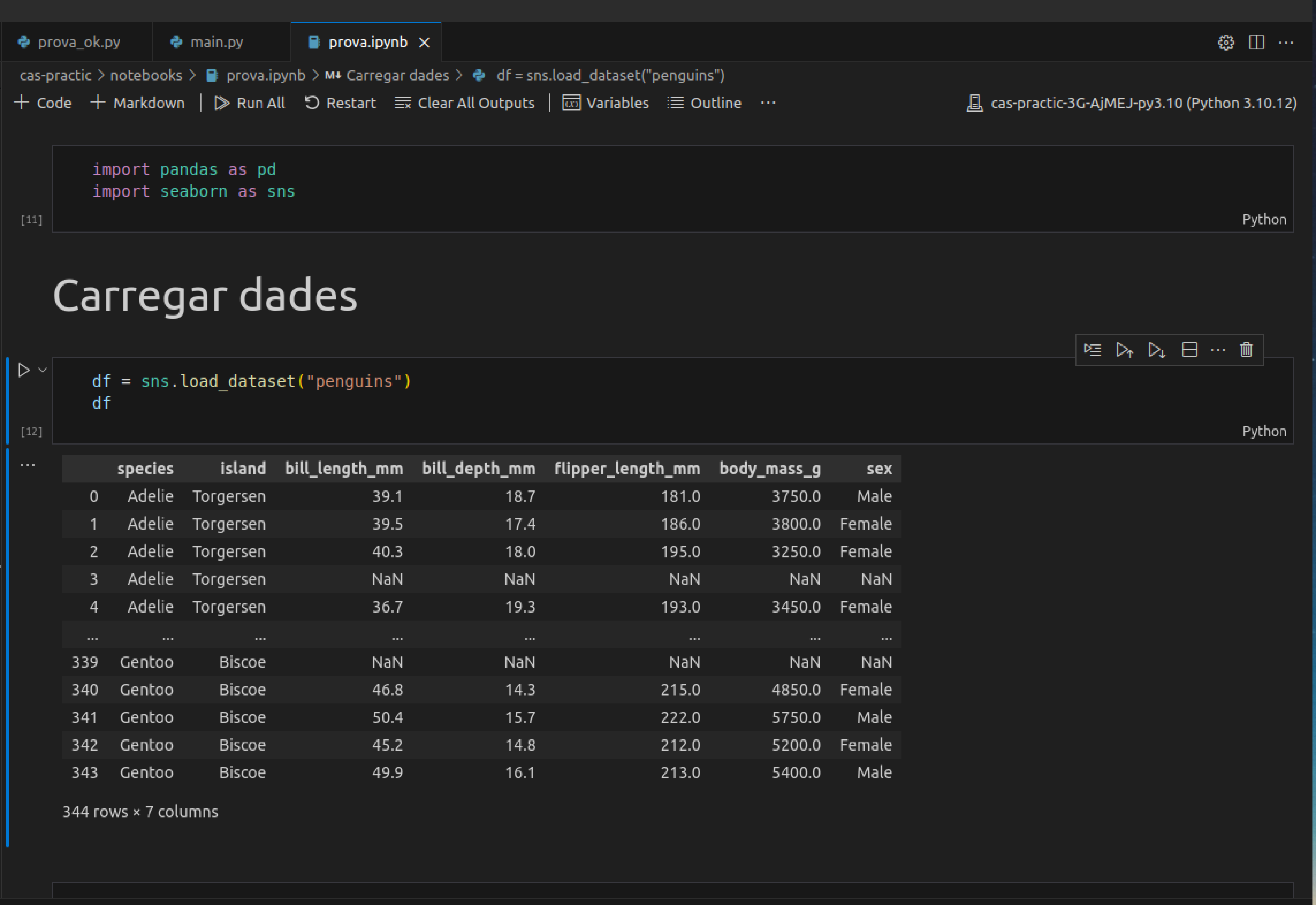
prova_ok.py
main.py
prova.ipynb
cas-practic > notebooks > prova.ipynb > M↓ Carregar dades > df = sns.load_dataset("penguins")
+ Code
+ Markdown
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cas-practic-3G-AjMEJ-py3.10 (Python 3.10.12)
[11]
Python
[12]
Python

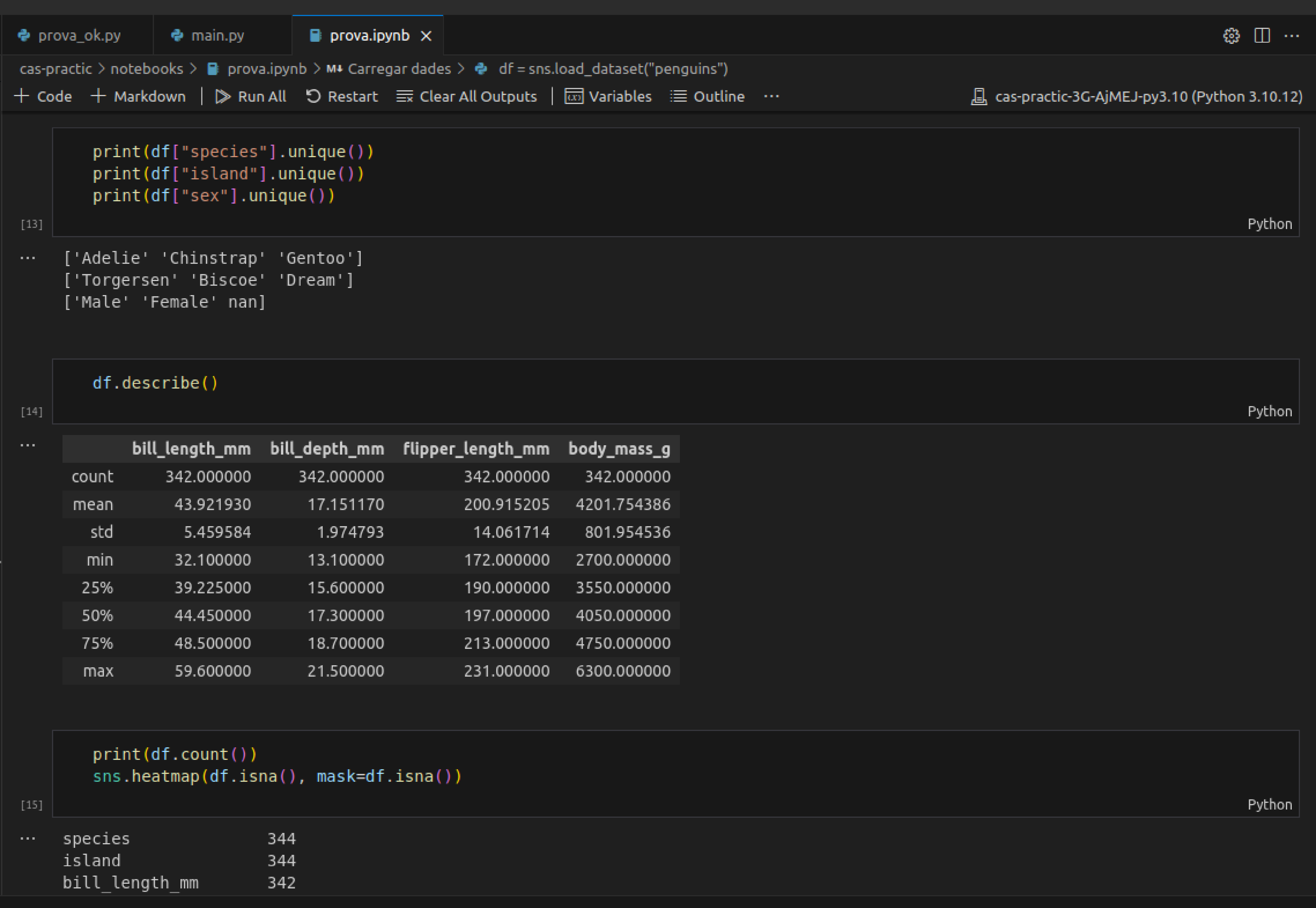
```python
import pandas as pd
import seaborn as sns
```

Carregar dades

```python
df = sns.load_dataset("penguins")
df
```

	species	island	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g	sex
0	Adelie	Torgersen	39.1	18.7	181.0	3750.0	Male
1	Adelie	Torgersen	39.5	17.4	186.0	3800.0	Female
2	Adelie	Torgersen	40.3	18.0	195.0	3250.0	Female
3	Adelie	Torgersen	NaN	NaN	NaN	NaN	NaN
4	Adelie	Torgersen	36.7	19.3	193.0	3450.0	Female
...	...	...	...	...	...	...	...
339	Gentoo	Biscoe	NaN	NaN	NaN	NaN	NaN
340	Gentoo	Biscoe	46.8	14.3	215.0	4850.0	Female
341	Gentoo	Biscoe	50.4	15.7	222.0	5750.0	Male
342	Gentoo	Biscoe	45.2	14.8	212.0	5200.0	Female
343	Gentoo	Biscoe	49.9	16.1	213.0	5400.0	Male

344 rows × 7 columns


prova_ok.py
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cas-practic > notebooks > prova.ipynb > M↓ Carregar dades > df = sns.load_dataset("penguins")
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cas-practic-3G-AjMEJ-py3.10 (Python 3.10.12)
[13]
Python
[14]
Python
[15]
Python

```python
print(df["species"].unique())
print(df["island"].unique())
print(df["sex"].unique())
```

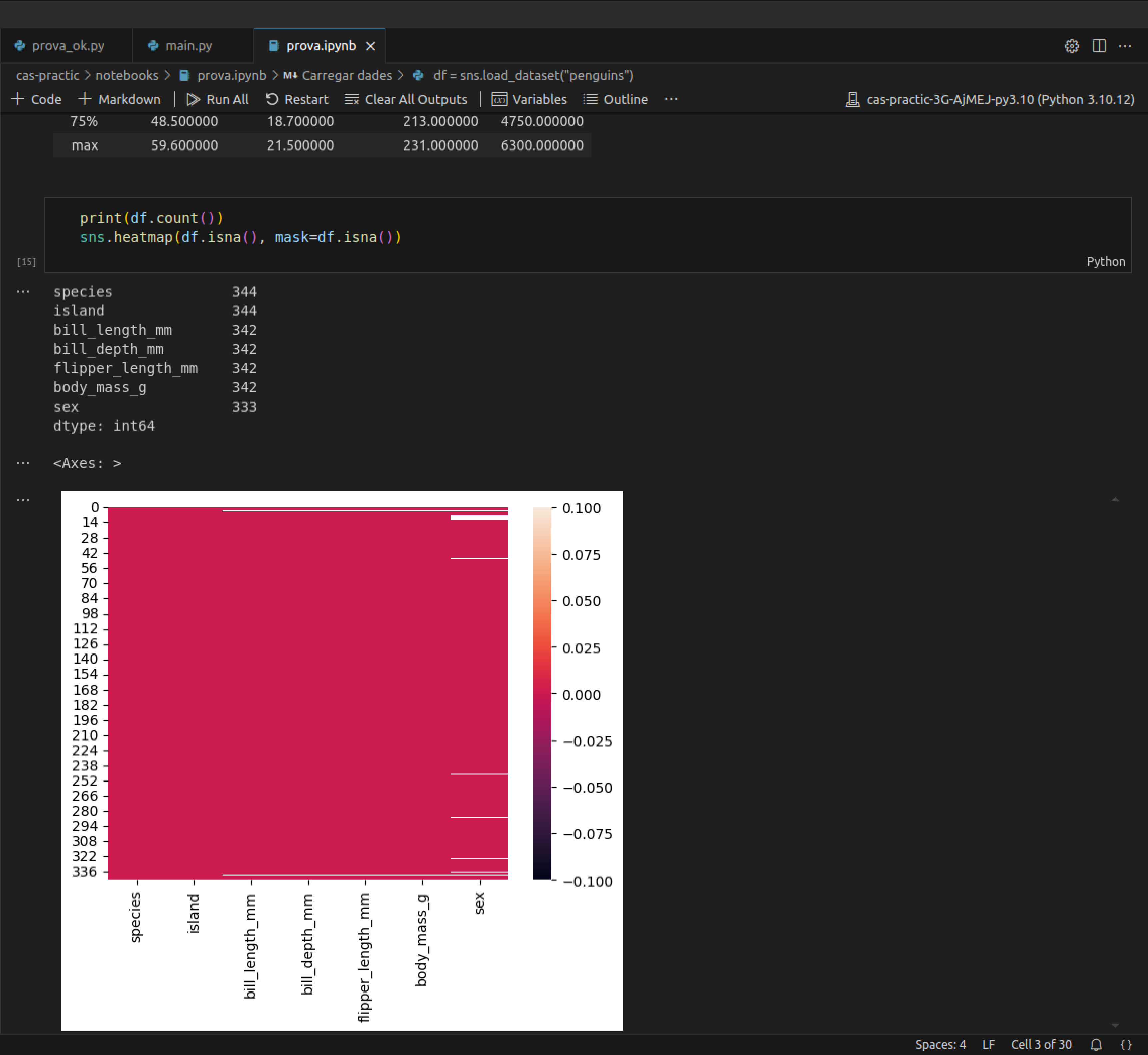
```
['Adelie' 'Chinstrap' 'Gentoo']
['Torgersen' 'Biscoe' 'Dream']
['Male' 'Female' nan]
```

```python
df.describe()
```

	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g
count	342.000000	342.000000	342.000000	342.000000
mean	43.921930	17.151170	200.915205	4201.754386
std	5.459584	1.974793	14.061714	801.954536
min	32.100000	13.100000	172.000000	2700.000000
25%	39.225000	15.600000	190.000000	3550.000000
50%	44.450000	17.300000	197.000000	4050.000000
75%	48.500000	18.700000	213.000000	4750.000000
max	59.600000	21.500000	231.000000	6300.000000

```python
print(df.count())
sns.heatmap(df.isna(), mask=df.isna())
```

```
species              344
island               344
bill_length_mm       342
```


prova_ok.py
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prova.ipynb
cas-practic > notebooks > prova.ipynb > M↓ Carregar dades > df = sns.load_dataset("penguins")
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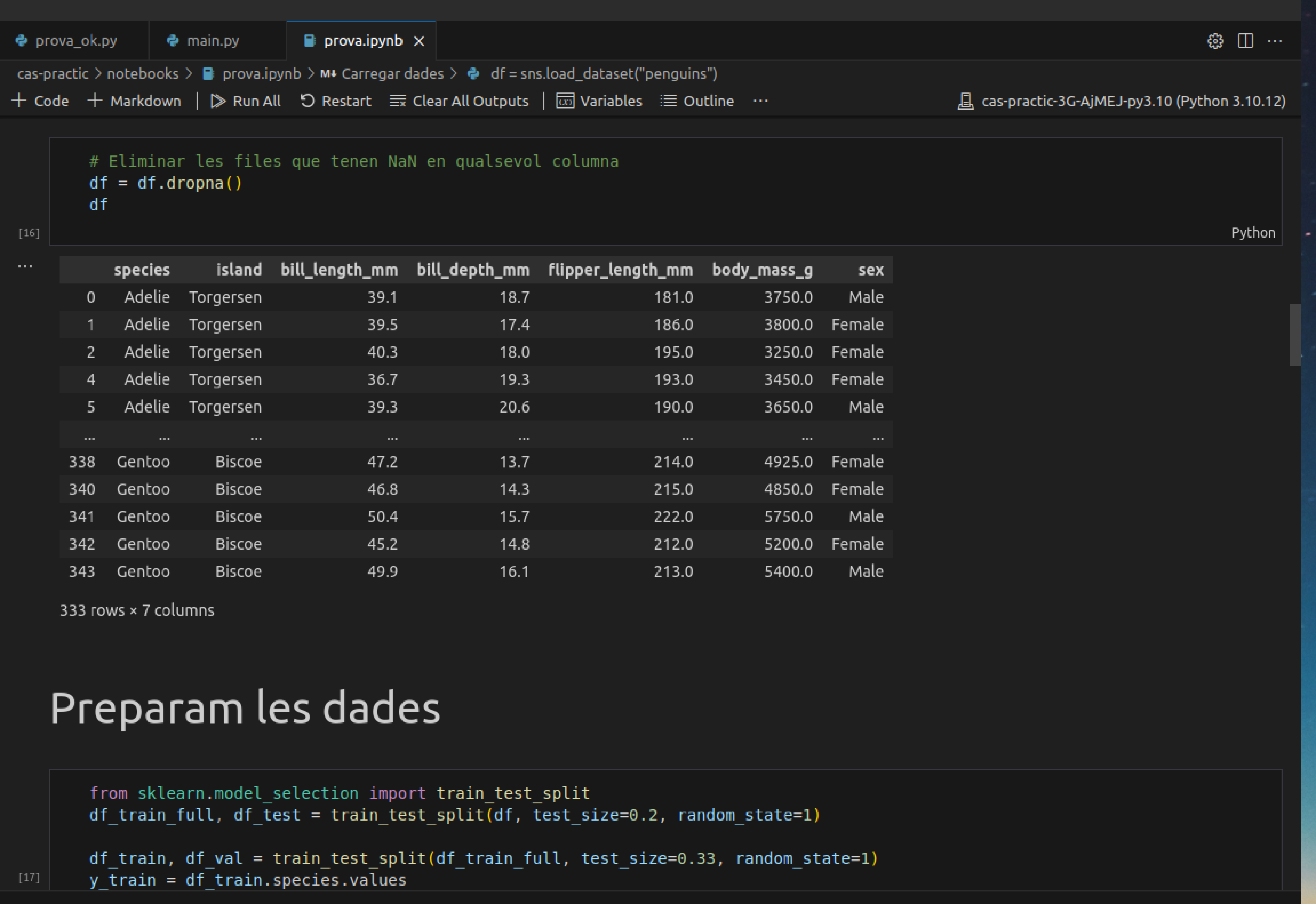
[15]
Python

75%	48.500000	18.700000	213.000000	4750.000000
max	59.600000	21.500000	231.000000	6300.000000

```python
print(df.count())
sns.heatmap(df.isna(), mask=df.isna())
```

```
species              344
island               344
bill_length_mm       342
bill_depth_mm        342
flipper_length_mm    342
body_mass_g          342
sex                  333
dtype: int64
```

```
<Axes: >
```


prova_ok.py
main.py
prova.ipynb ×
cas-practic > notebooks > prova.ipynb > M↓ Carregar dades > df = sns.load_dataset("penguins")
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···
cas-practic-3G-AjMEJ-py3.10 (Python 3.10.12)

```
# Eliminar les files que tenen NaN en qualsevol columna
df = df.dropna()
df
```

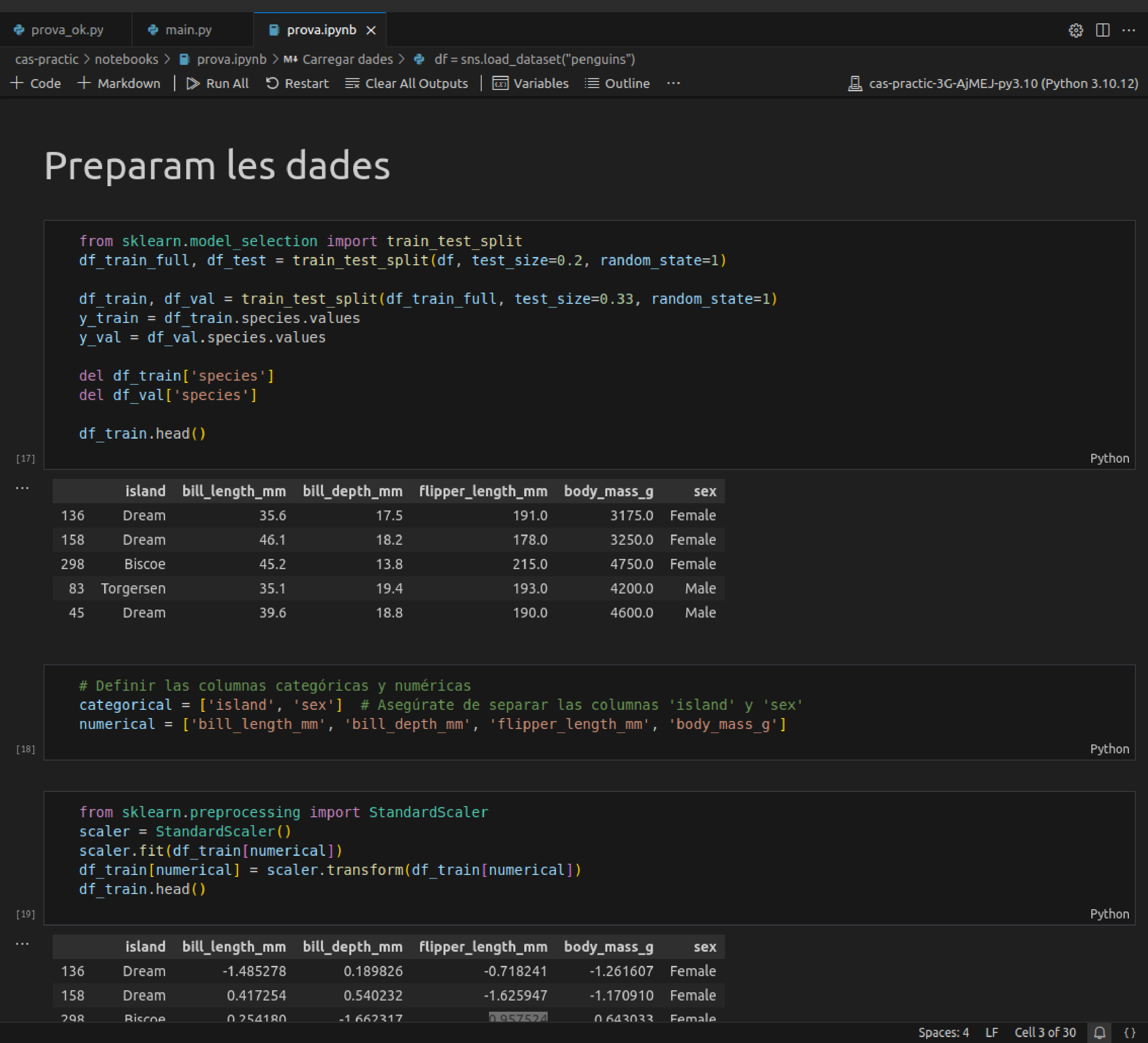
[16] Python

```
     species     island  bill_length_mm  bill_depth_mm  flipper_length_mm  body_mass_g     sex
  0   Adelie  Torgersen            39.1           18.7              181.0       3750.0    Male
  1   Adelie  Torgersen            39.5           17.4              186.0       3800.0  Female
  2   Adelie  Torgersen            40.3           18.0              195.0       3250.0  Female
  4   Adelie  Torgersen            36.7           19.3              193.0       3450.0  Female
  5   Adelie  Torgersen            39.3           20.6              190.0       3650.0    Male
...      ...        ...             ...            ...                ...          ...     ...
338   Gentoo     Biscoe            47.2           13.7              214.0       4925.0  Female
340   Gentoo     Biscoe            46.8           14.3              215.0       4850.0  Female
341   Gentoo     Biscoe            50.4           15.7              222.0       5750.0    Male
342   Gentoo     Biscoe            45.2           14.8              212.0       5200.0  Female
343   Gentoo     Biscoe            49.9           16.1              213.0       5400.0    Male

333 rows × 7 columns
```

Preparam les dades

```
from sklearn.model_selection import train_test_split
df_train_full, df_test = train_test_split(df, test_size=0.2, random_state=1)

df_train, df_val = train_test_split(df_train_full, test_size=0.33, random_state=1)
y_train = df_train.species.values
```

[17]


prova_ok.py
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cas-practic > notebooks > prova.ipynb > M↓ Carregar dades > df = sns.load_dataset("penguins")
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Preparam les dades

```python
from sklearn.model_selection import train_test_split
df_train_full, df_test = train_test_split(df, test_size=0.2, random_state=1)

df_train, df_val = train_test_split(df_train_full, test_size=0.33, random_state=1)
y_train = df_train.species.values
y_val = df_val.species.values

del df_train['species']
del df_val['species']

df_train.head()
```

[17] Python

	island	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g	sex
136	Dream	35.6	17.5	191.0	3175.0	Female
158	Dream	46.1	18.2	178.0	3250.0	Female
298	Biscoe	45.2	13.8	215.0	4750.0	Female
83	Torgersen	35.1	19.4	193.0	4200.0	Male
45	Dream	39.6	18.8	190.0	4600.0	Male

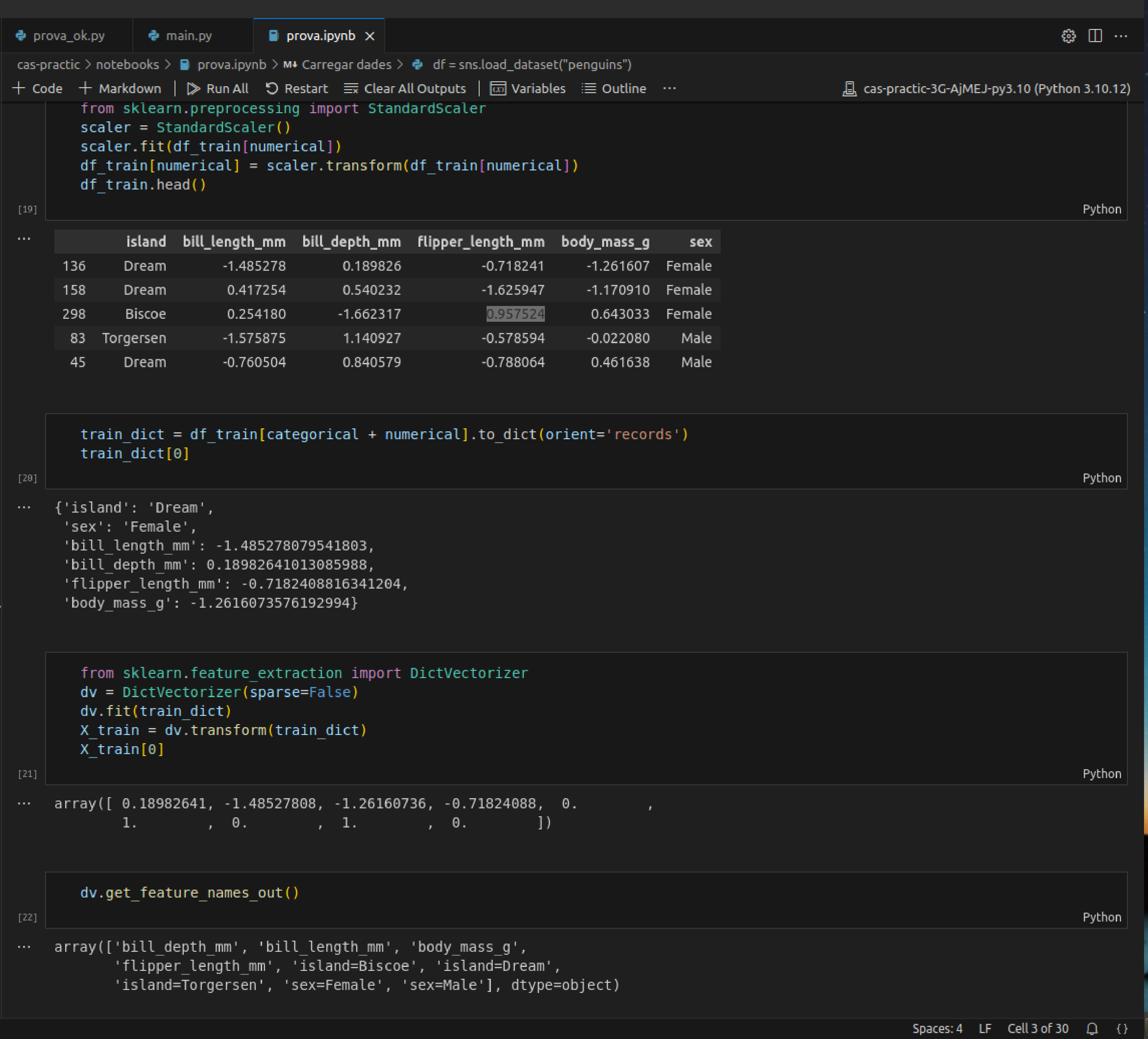
```python
# Definir las columnas categóricas y numéricas
categorical = ['island', 'sex']  # Asegúrate de separar las columnas 'island' y 'sex'
numerical = ['bill_length_mm', 'bill_depth_mm', 'flipper_length_mm', 'body_mass_g']
```

[18] Python

```python
from sklearn.preprocessing import StandardScaler
scaler = StandardScaler()
scaler.fit(df_train[numerical])
df_train[numerical] = scaler.transform(df_train[numerical])
df_train.head()
```

[19] Python

	island	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g	sex
136	Dream	-1.485278	0.189826	-0.718241	-1.261607	Female
158	Dream	0.417254	0.540232	-1.625947	-1.170910	Female
298	Biscoe	0.254180	-1.662317	0.957524	0.643033	Female


prova_ok.py
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[19]
Python

```python
from sklearn.preprocessing import StandardScaler
scaler = StandardScaler()
scaler.fit(df_train[numerical])
df_train[numerical] = scaler.transform(df_train[numerical])
df_train.head()
```

	island	bill_length_mm	bill_depth_mm	flipper_length_mm	body_mass_g	sex
136	Dream	-1.485278	0.189826	-0.718241	-1.261607	Female
158	Dream	0.417254	0.540232	-1.625947	-1.170910	Female
298	Biscoe	0.254180	-1.662317	0.957524	0.643033	Female
83	Torgersen	-1.575875	1.140927	-0.578594	-0.022080	Male
45	Dream	-0.760504	0.840579	-0.788064	0.461638	Male

```python
train_dict = df_train[categorical + numerical].to_dict(orient='records')
train_dict[0]
```

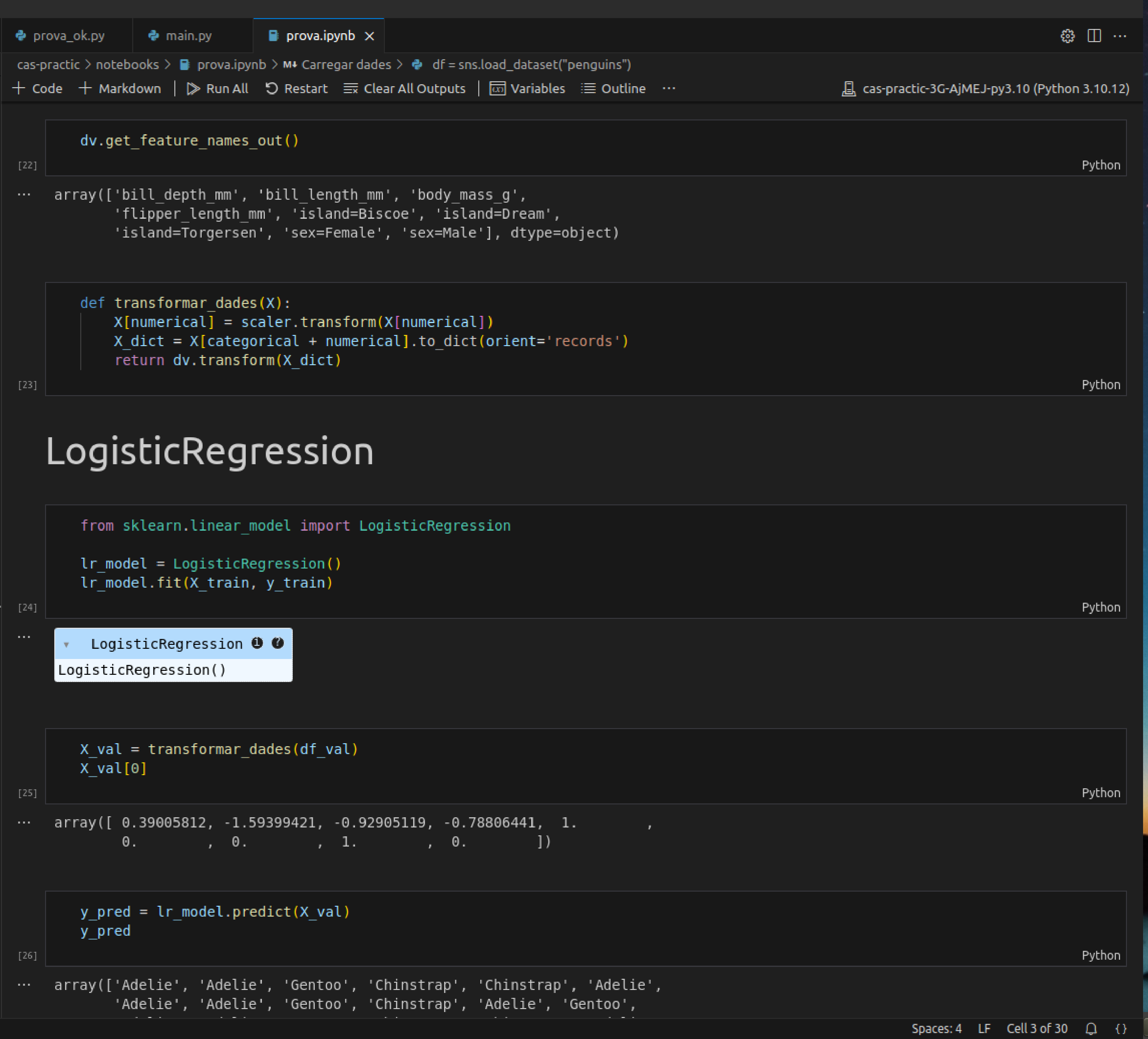
```
{'island': 'Dream',
 'sex': 'Female',
 'bill_length_mm': -1.485278079541803,
 'bill_depth_mm': 0.18982641013085988,
 'flipper_length_mm': -0.7182408816341204,
 'body_mass_g': -1.2616073576192994}
```

```python
from sklearn.feature_extraction import DictVectorizer
dv = DictVectorizer(sparse=False)
dv.fit(train_dict)
X_train = dv.transform(train_dict)
X_train[0]
```

```
array([ 0.18982641, -1.48527808, -1.26160736, -0.71824088,  0.        ,
        1.        ,  0.        ,  1.        ,  0.        ])
```

```python
dv.get_feature_names_out()
```

```
array(['bill_depth_mm', 'bill_length_mm', 'body_mass_g',
       'flipper_length_mm', 'island=Biscoe', 'island=Dream',
       'island=Torgersen', 'sex=Female', 'sex=Male'], dtype=object)
```


prova_ok.py
main.py
prova.ipynb
cas-practic > notebooks > prova.ipynb > M↓ Carregar dades > df = sns.load_dataset("penguins")
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[22]

```python
dv.get_feature_names_out()
```

```
array(['bill_depth_mm', 'bill_length_mm', 'body_mass_g',
       'flipper_length_mm', 'island=Biscoe', 'island=Dream',
       'island=Torgersen', 'sex=Female', 'sex=Male'], dtype=object)
```

[23]

```python
def transformar_dades(X):
    X[numerical] = scaler.transform(X[numerical])
    X_dict = X[categorical + numerical].to_dict(orient='records')
    return dv.transform(X_dict)
```

LogisticRegression

[24]

```python
from sklearn.linear_model import LogisticRegression

lr_model = LogisticRegression()
lr_model.fit(X_train, y_train)
```

```
▾ LogisticRegression
LogisticRegression()
```

[25]

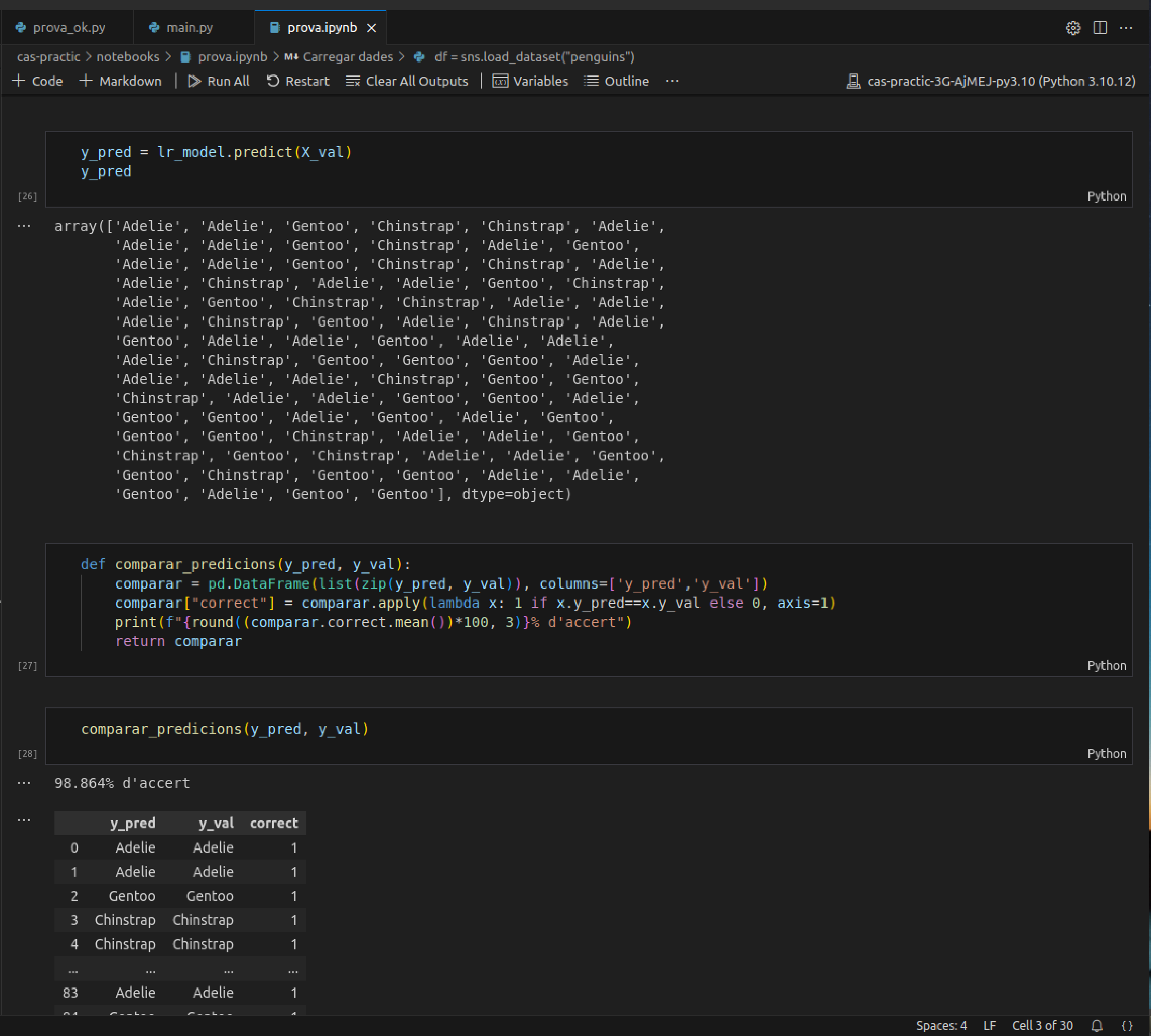
```python
X_val = transformar_dades(df_val)
X_val[0]
```

```
array([ 0.39005812, -1.59399421, -0.92905119, -0.78806441,  1.        ,
        0.        ,  0.        ,  1.        ,  0.        ])
```

[26]

```python
y_pred = lr_model.predict(X_val)
y_pred
```

```
array(['Adelie', 'Adelie', 'Gentoo', 'Chinstrap', 'Chinstrap', 'Adelie',
       'Adelie', 'Adelie', 'Gentoo', 'Chinstrap', 'Adelie', 'Gentoo',
```


prova_ok.py
main.py
prova.ipynb
cas-practic > notebooks > prova.ipynb > M↓ Carregar dades > df = sns.load_dataset("penguins")
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[26]

```python
y_pred = lr_model.predict(X_val)
y_pred
```

Python

```
array(['Adelie', 'Adelie', 'Gentoo', 'Chinstrap', 'Chinstrap', 'Adelie',
       'Adelie', 'Adelie', 'Gentoo', 'Chinstrap', 'Adelie', 'Gentoo',
       'Adelie', 'Adelie', 'Gentoo', 'Chinstrap', 'Chinstrap', 'Adelie',
       'Adelie', 'Chinstrap', 'Adelie', 'Adelie', 'Gentoo', 'Chinstrap',
       'Adelie', 'Gentoo', 'Chinstrap', 'Chinstrap', 'Adelie', 'Adelie',
       'Adelie', 'Chinstrap', 'Gentoo', 'Adelie', 'Chinstrap', 'Adelie',
       'Gentoo', 'Adelie', 'Adelie', 'Gentoo', 'Adelie', 'Adelie',
       'Adelie', 'Chinstrap', 'Gentoo', 'Gentoo', 'Gentoo', 'Adelie',
       'Adelie', 'Adelie', 'Adelie', 'Chinstrap', 'Gentoo', 'Gentoo',
       'Chinstrap', 'Adelie', 'Adelie', 'Gentoo', 'Gentoo', 'Adelie',
       'Gentoo', 'Gentoo', 'Adelie', 'Gentoo', 'Adelie', 'Gentoo',
       'Gentoo', 'Gentoo', 'Chinstrap', 'Adelie', 'Adelie', 'Gentoo',
       'Chinstrap', 'Gentoo', 'Chinstrap', 'Adelie', 'Adelie', 'Gentoo',
       'Gentoo', 'Chinstrap', 'Gentoo', 'Gentoo', 'Adelie', 'Adelie',
       'Gentoo', 'Adelie', 'Gentoo', 'Gentoo'], dtype=object)
```

[27]

```python
def comparar_predicions(y_pred, y_val):
    comparar = pd.DataFrame(list(zip(y_pred, y_val)), columns=['y_pred','y_val'])
    comparar["correct"] = comparar.apply(lambda x: 1 if x.y_pred==x.y_val else 0, axis=1)
    print(f"{round((comparar.correct.mean())*100, 3)}% d'accert")
    return comparar
```

Python

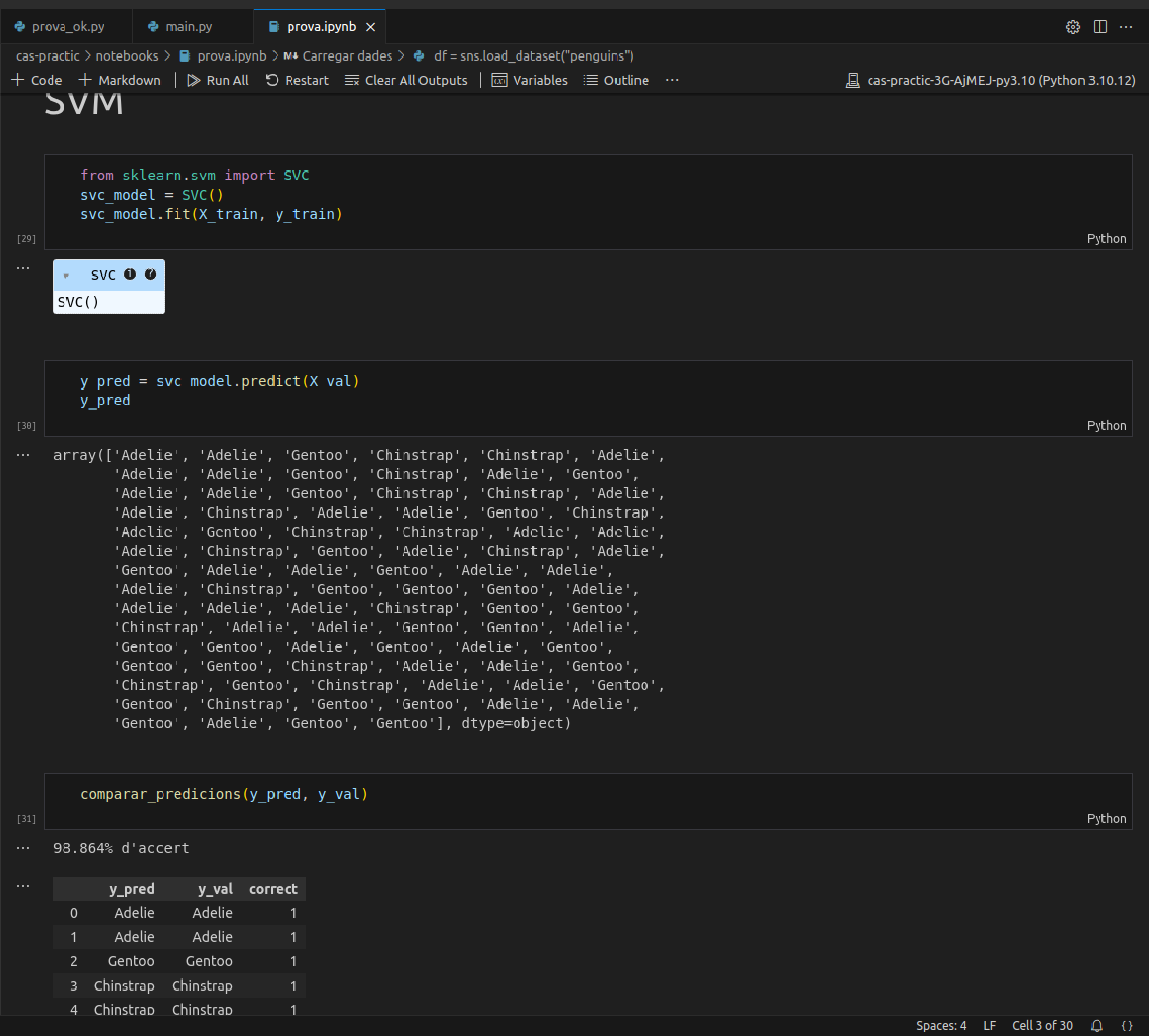
[28]

```python
comparar_predicions(y_pred, y_val)
```

Python

```
98.864% d'accert
```

	y_pred	y_val	correct
0	Adelie	Adelie	1
1	Adelie	Adelie	1
2	Gentoo	Gentoo	1
3	Chinstrap	Chinstrap	1
4	Chinstrap	Chinstrap	1
...	...	...	...
83	Adelie	Adelie	1



prova_ok.py
main.py
prova.ipynb
cas-practic > notebooks > prova.ipynb > M↓ Carregar dades > df = sns.load_dataset("penguins")
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+ Markdown
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SVM

```
[29]
from sklearn.svm import SVC
svc_model = SVC()
svc_model.fit(X_train, y_train)
```

```
SVC
SVC()
```

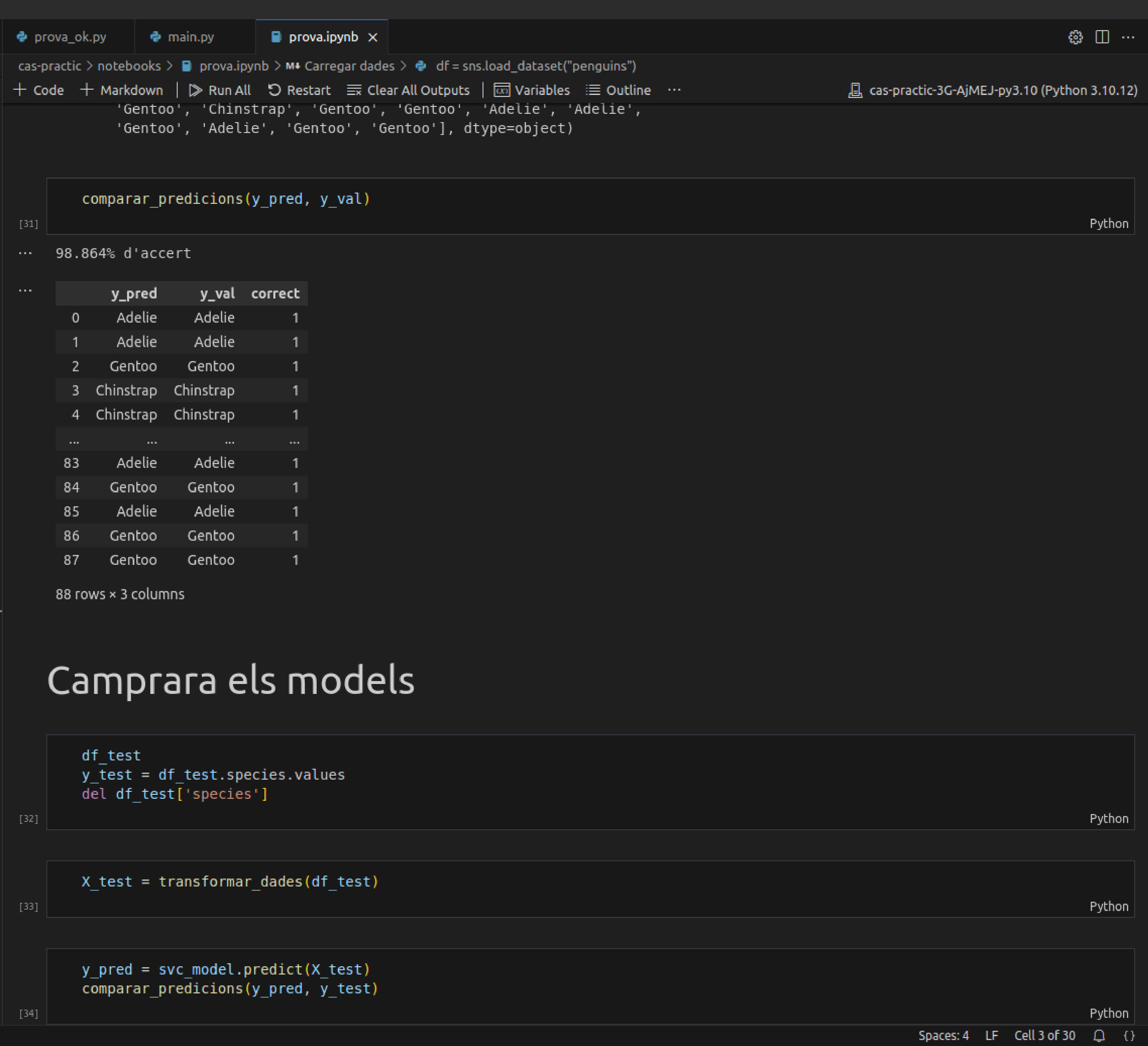
```
[30]
y_pred = svc_model.predict(X_val)
y_pred
```

```
array(['Adelie', 'Adelie', 'Gentoo', 'Chinstrap', 'Chinstrap', 'Adelie',
       'Adelie', 'Adelie', 'Gentoo', 'Chinstrap', 'Adelie', 'Gentoo',
       'Adelie', 'Adelie', 'Gentoo', 'Chinstrap', 'Chinstrap', 'Adelie',
       'Adelie', 'Chinstrap', 'Adelie', 'Adelie', 'Gentoo', 'Chinstrap',
       'Adelie', 'Gentoo', 'Chinstrap', 'Chinstrap', 'Adelie', 'Adelie',
       'Adelie', 'Chinstrap', 'Gentoo', 'Adelie', 'Chinstrap', 'Adelie',
       'Gentoo', 'Adelie', 'Adelie', 'Gentoo', 'Adelie', 'Adelie',
       'Adelie', 'Chinstrap', 'Gentoo', 'Gentoo', 'Gentoo', 'Adelie',
       'Adelie', 'Adelie', 'Adelie', 'Chinstrap', 'Gentoo', 'Gentoo',
       'Chinstrap', 'Adelie', 'Adelie', 'Gentoo', 'Gentoo', 'Adelie',
       'Gentoo', 'Gentoo', 'Adelie', 'Gentoo', 'Adelie', 'Gentoo',
       'Gentoo', 'Gentoo', 'Chinstrap', 'Adelie', 'Adelie', 'Gentoo',
       'Chinstrap', 'Gentoo', 'Chinstrap', 'Adelie', 'Adelie', 'Gentoo',
       'Gentoo', 'Chinstrap', 'Gentoo', 'Gentoo', 'Adelie', 'Adelie',
       'Gentoo', 'Adelie', 'Gentoo', 'Gentoo'], dtype=object)
```

```
[31]
comparar_predicions(y_pred, y_val)
```

```
98.864% d'accert
```

	y_pred	y_val	correct
0	Adelie	Adelie	1
1	Adelie	Adelie	1
2	Gentoo	Gentoo	1
3	Chinstrap	Chinstrap	1
4	Chinstrap	Chinstrap	1



```
       'Gentoo', 'Chinstrap', 'Gentoo', 'Gentoo', 'Adelie', 'Adelie',
       'Gentoo', 'Adelie', 'Gentoo', 'Gentoo'], dtype=object)
```

```python
comparar_predicions(y_pred, y_val)
```

```
98.864% d'accert
```

	y_pred	y_val	correct
0	Adelie	Adelie	1
1	Adelie	Adelie	1
2	Gentoo	Gentoo	1
3	Chinstrap	Chinstrap	1
4	Chinstrap	Chinstrap	1
...	...	...	...
83	Adelie	Adelie	1
84	Gentoo	Gentoo	1
85	Adelie	Adelie	1
86	Gentoo	Gentoo	1
87	Gentoo	Gentoo	1

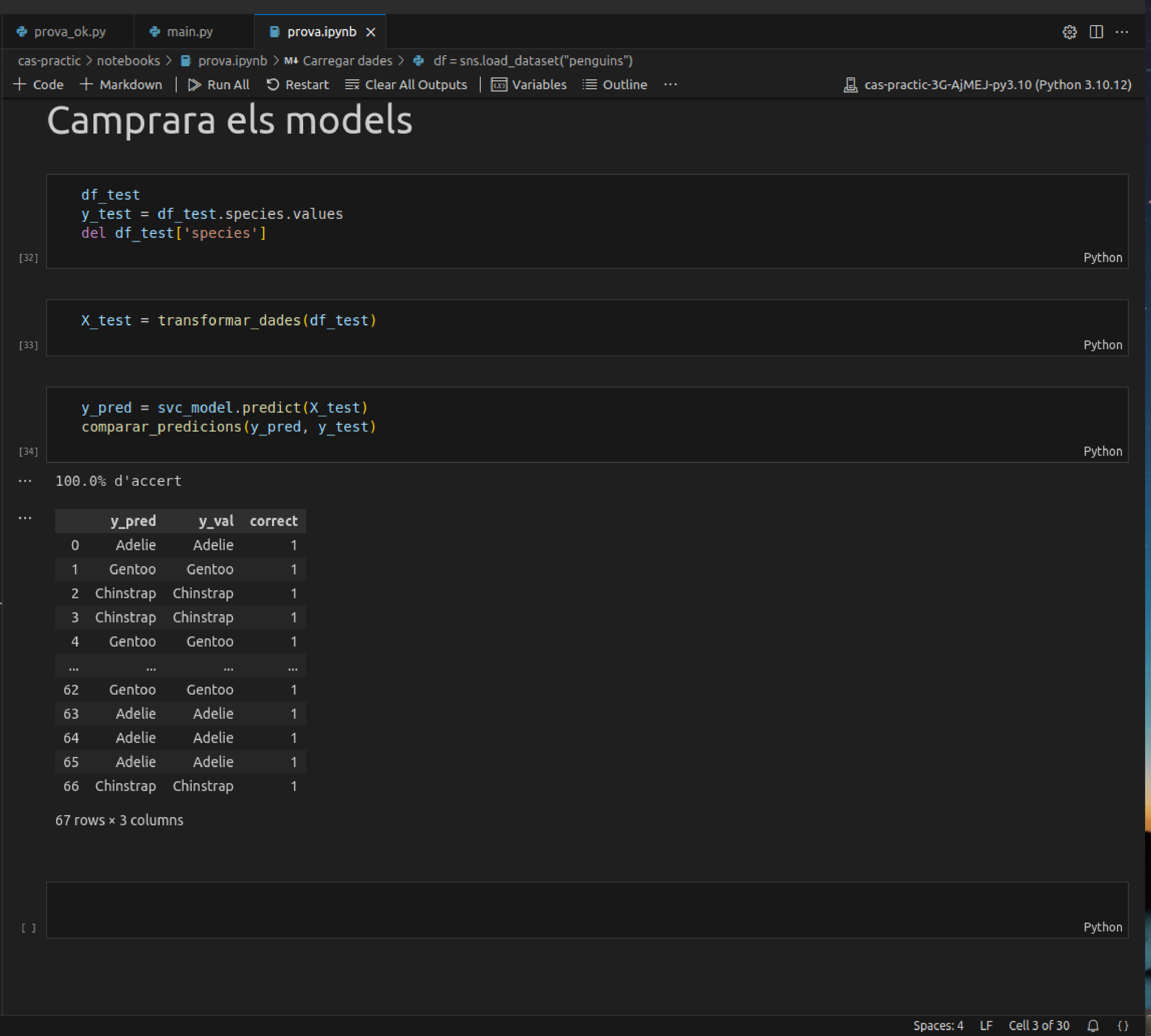
88 rows × 3 columns

Camprara els models

```python
df_test
y_test = df_test.species.values
del df_test['species']
```

```python
X_test = transformar_dades(df_test)
```

```python
y_pred = svc_model.predict(X_test)
comparar_predicions(y_pred, y_test)
```



Camprara els models

```python
df_test
y_test = df_test.species.values
del df_test['species']
```

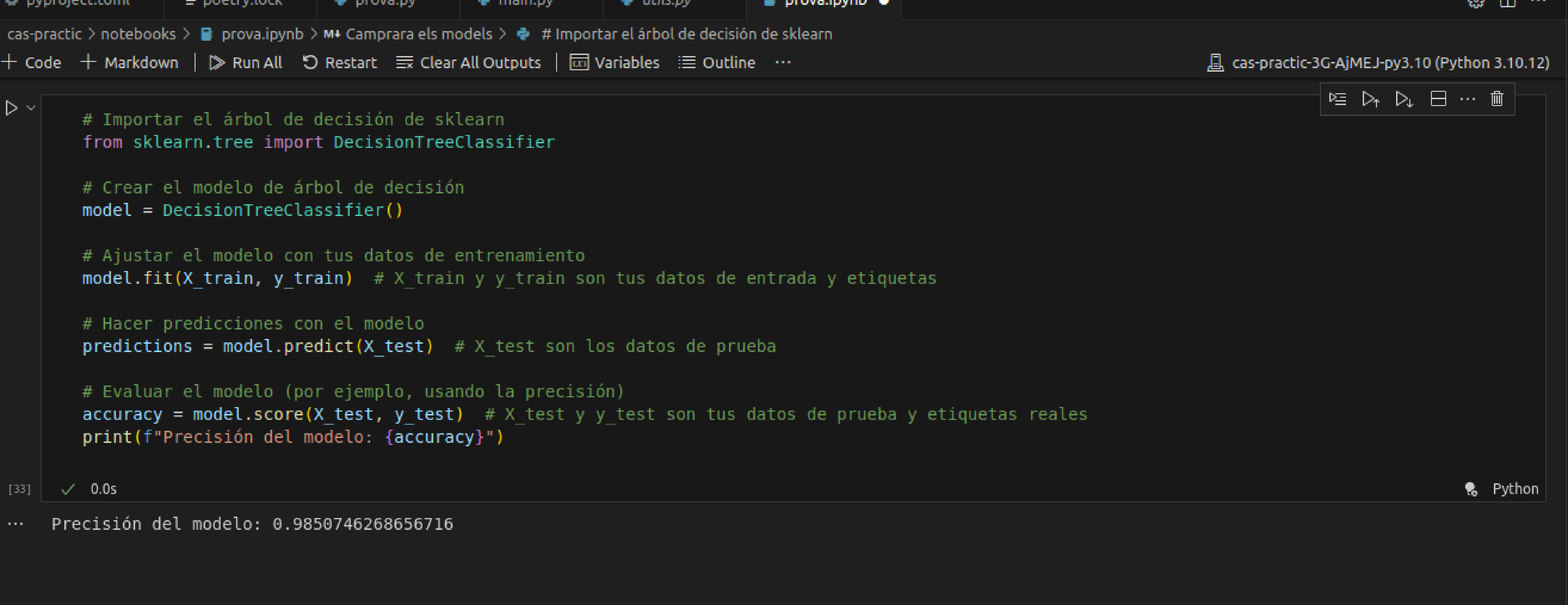
```python
X_test = transformar_dades(df_test)
```

```python
y_pred = svc_model.predict(X_test)
comparar_predicions(y_pred, y_test)
```

```
100.0% d'accert
```

	y_pred	y_val	correct
0	Adelie	Adelie	1
1	Gentoo	Gentoo	1
2	Chinstrap	Chinstrap	1
3	Chinstrap	Chinstrap	1
4	Gentoo	Gentoo	1
...	...	...	...
62	Gentoo	Gentoo	1
63	Adelie	Adelie	1
64	Adelie	Adelie	1
65	Adelie	Adelie	1
66	Chinstrap	Chinstrap	1

67 rows × 3 columns


pyproject.toml
poetry.lock
prova.py
main.py
utils.py
prova.ipynb
cas-practic > notebooks > prova.ipynb > M↓ Camprara els models > # Importar el árbol de decisión de sklearn
+ Code
+ Markdown
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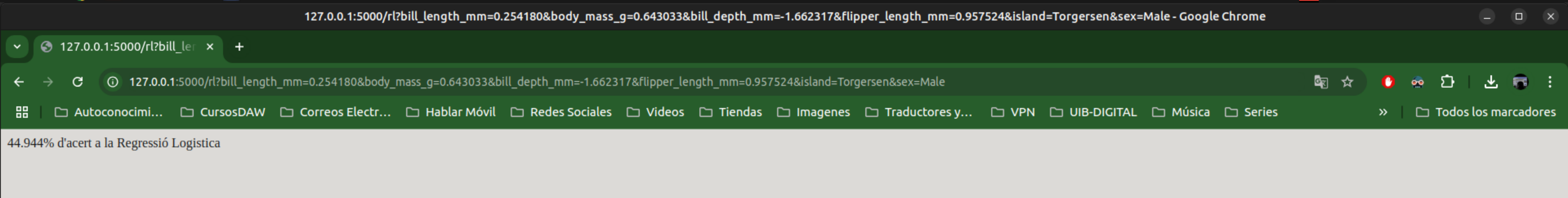
```python
# Importar el árbol de decisión de sklearn
from sklearn.tree import DecisionTreeClassifier

# Crear el modelo de árbol de decisión
model = DecisionTreeClassifier()

# Ajustar el modelo con tus datos de entrenamiento
model.fit(X_train, y_train)  # X_train y y_train son tus datos de entrada y etiquetas

# Hacer predicciones con el modelo
predictions = model.predict(X_test)  # X_test son los datos de prueba

# Evaluar el modelo (por ejemplo, usando la precisión)
accuracy = model.score(X_test, y_test)  # X_test y y_test son tus datos de prueba y etiquetas reales
print(f"Precisión del modelo: {accuracy}")
```

```
Precisión del modelo: 0.9850746268656716
```



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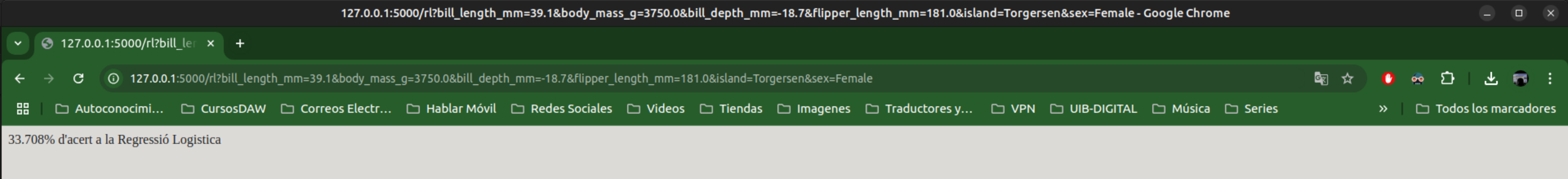
```
44.944% d'acert a la Regressió Logistica
```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33.708% d'acert a la Regressió Logistica
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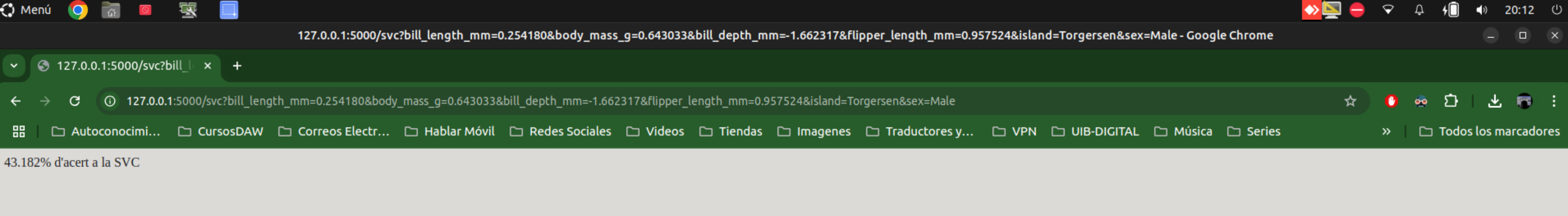

Menú
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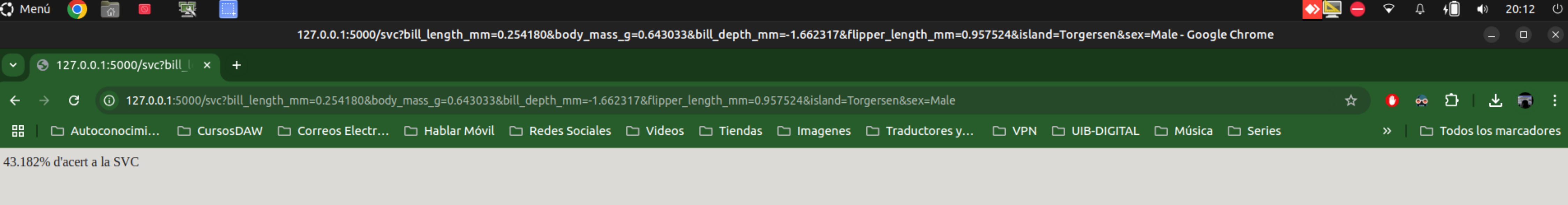
127.0.0.1:5000/svc?bill_length_mm=0.254180&body_mass_g=0.643033&bill_depth_mm=-1.662317&flipper_length_mm=0.957524&island=Torgersen&sex=Male
```

```
43.182% d'acert a la SVC
```



Menú
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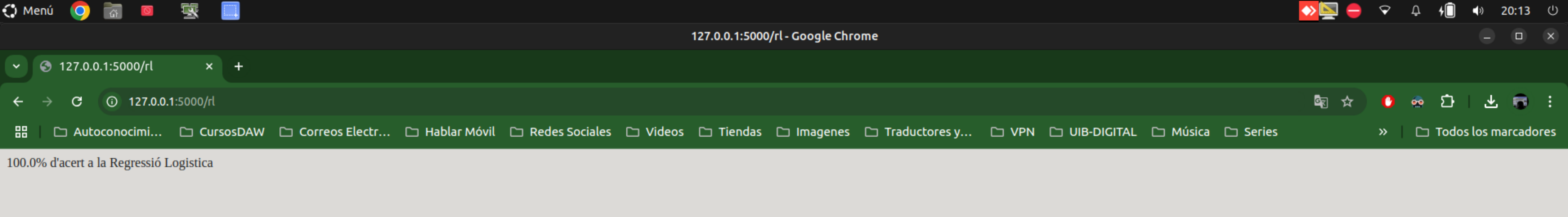
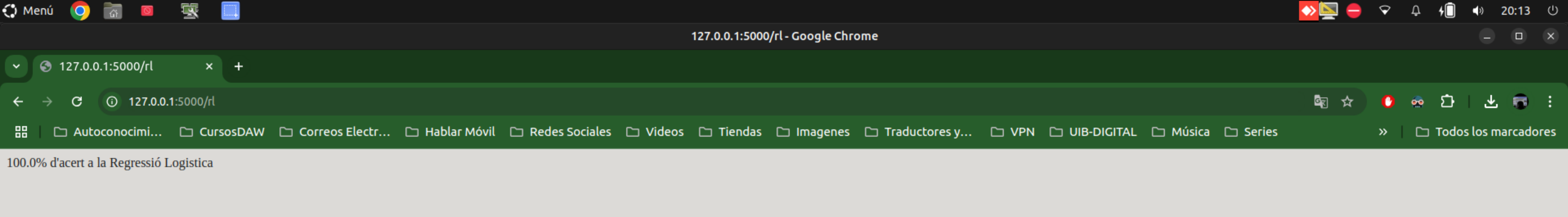
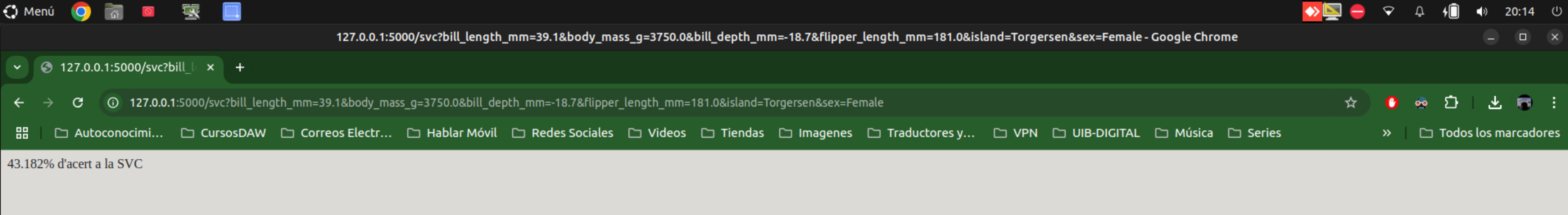
```
43.182% d'acert a la SVC
```



```
100.0% d'acert a la Regressió Logistica
```



```
100.0% d'acert a la Regressió Logistica
```



Menú
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127.0.0.1:5000/svc?bill_length_mm=39.1&body_mass_g=3750.0&bill_depth_mm=-18.7&flipper_length_mm=181.0&island=Torgersen&sex=Female
```
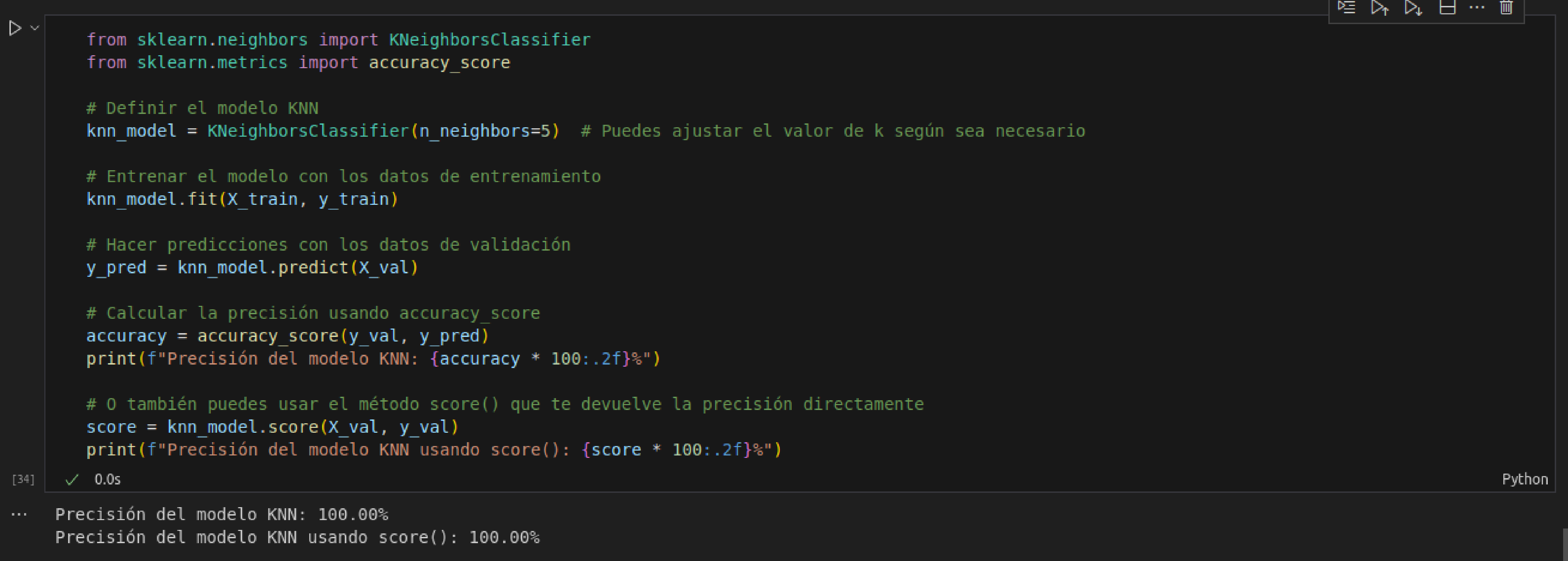

43.182% d'acert a la SVC



```python
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import accuracy_score

# Definir el modelo KNN
knn_model = KNeighborsClassifier(n_neighbors=5)  # Puedes ajustar el valor de k según sea necesario

# Entrenar el modelo con los datos de entrenamiento
knn_model.fit(X_train, y_train)

# Hacer predicciones con los datos de validación
y_pred = knn_model.predict(X_val)

# Calcular la precisión usando accuracy_score
accuracy = accuracy_score(y_val, y_pred)
print(f"Precisión del modelo KNN: {accuracy * 100:.2f}%")

# O también puedes usar el método score() que te devuelve la precisión directamente
score = knn_model.score(X_val, y_val)
print(f"Precisión del modelo KNN usando score(): {score * 100:.2f}%")
```

```
Precisión del modelo KNN: 100.00%
Precisión del modelo KNN usando score(): 100.00%
```