**Christ (Deemed to be University), Bengaluru.**

**MAI272 - Advanced Machine Learning**

**Lab Exercise 2**

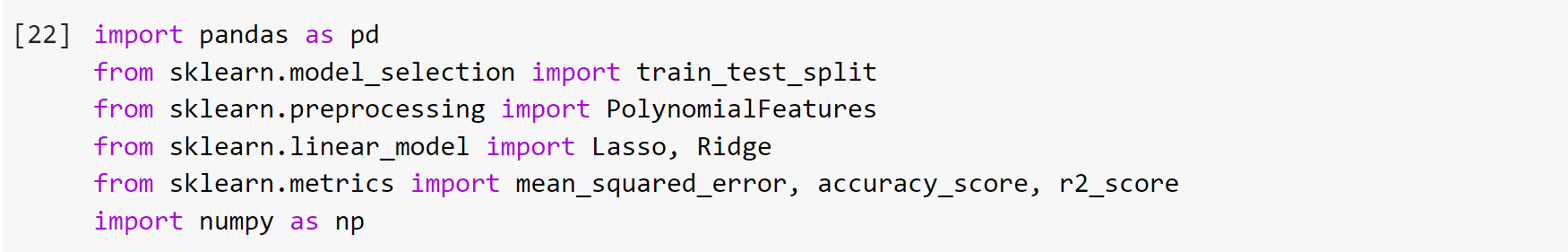
**Department of Computer Science**

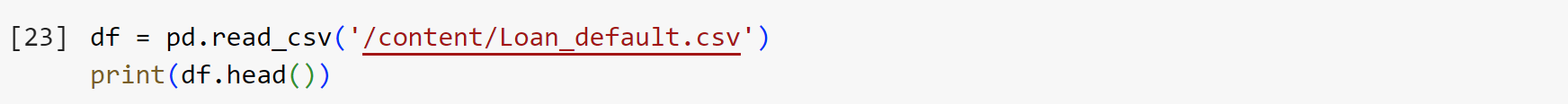
**Name : Abhijith E**

**Reg No : 2448503**

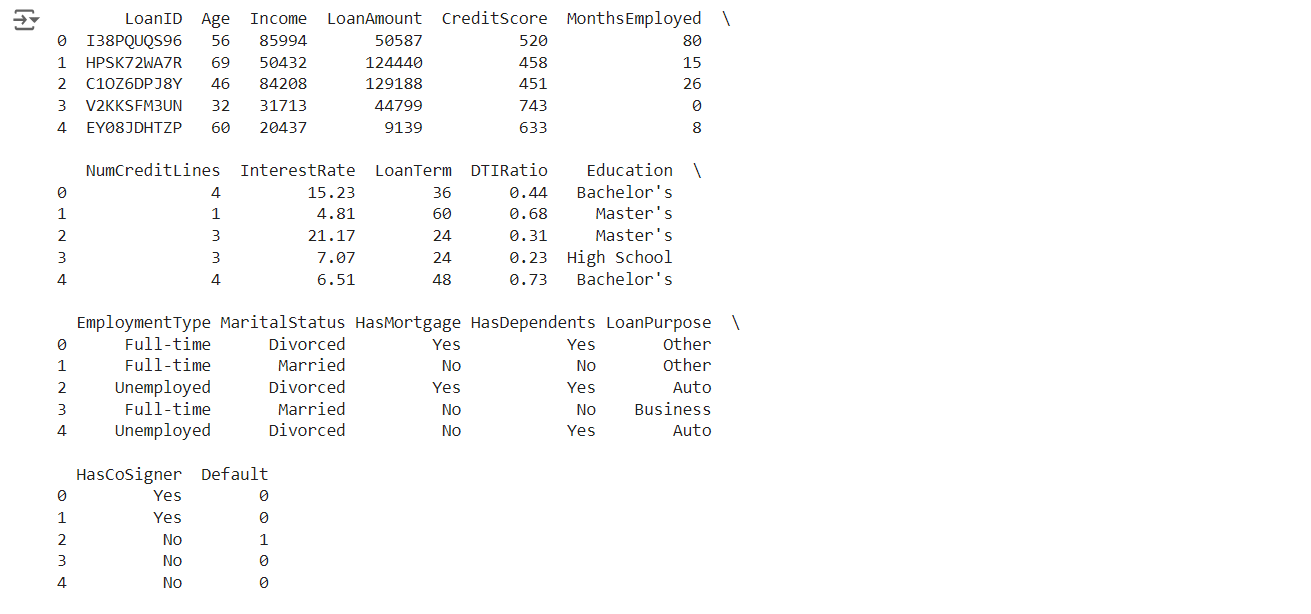
1. Data Preparation:

* Load the dataset.

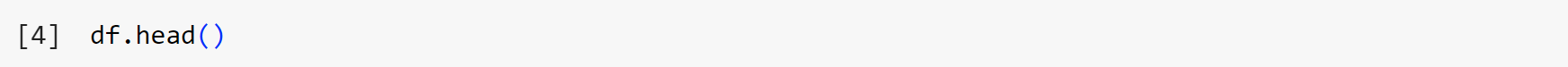




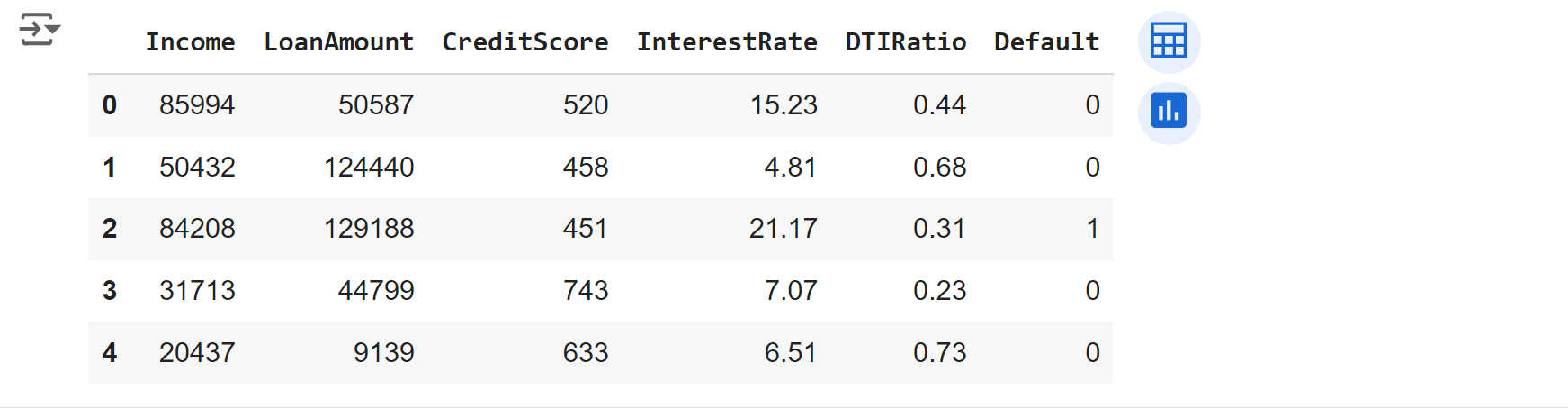
Output :

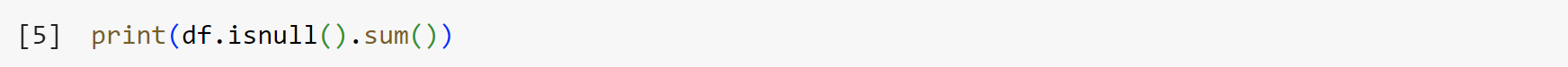






Output :

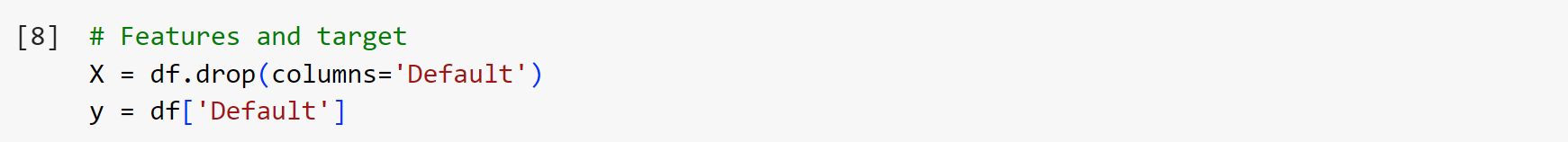


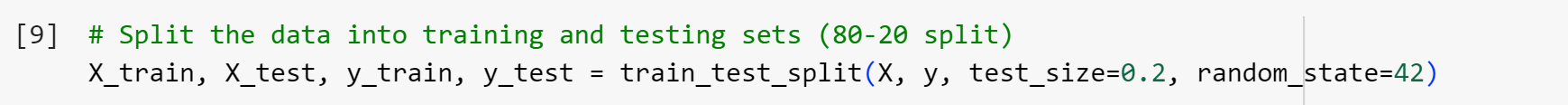


Output :



* Split the data into training and testing sets (80-20 split).

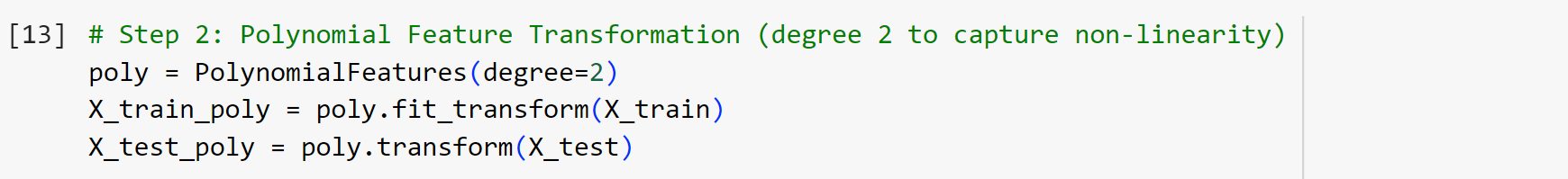




1. Polynomial Feature Transformation:

* Convert the features into polynomial features of degree 2 or 3 to capture

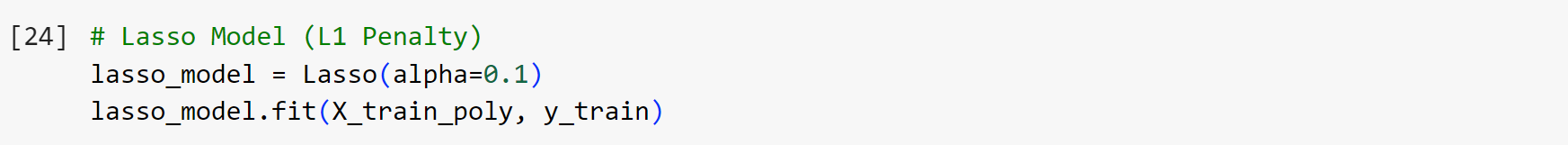
non-linear relationships.



1. Apply L1 (Lasso) and L2 (Ridge) Penalty:

* Build two models:
* One with Lasso regression (L1 penalty) to enforce sparsity,

potentially eliminating some features.

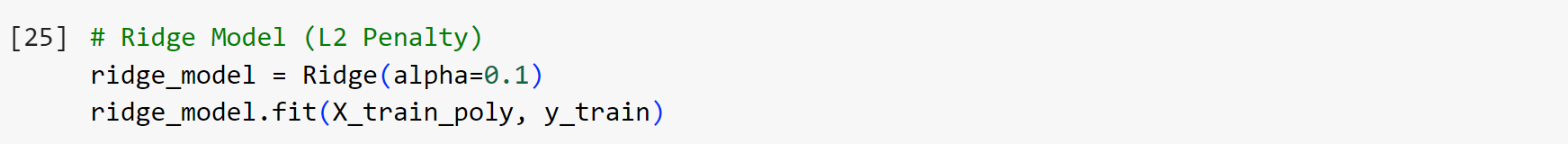


Output :



* Another with Ridge regression (L2 penalty) to reduce the impact

of less important features by shrinking their coefficients.

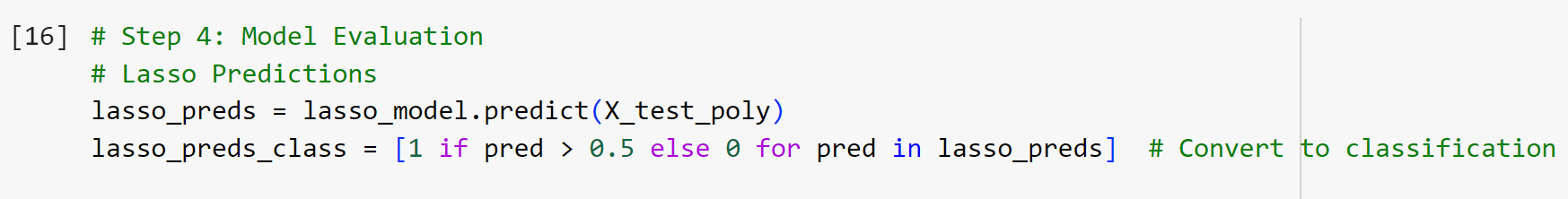


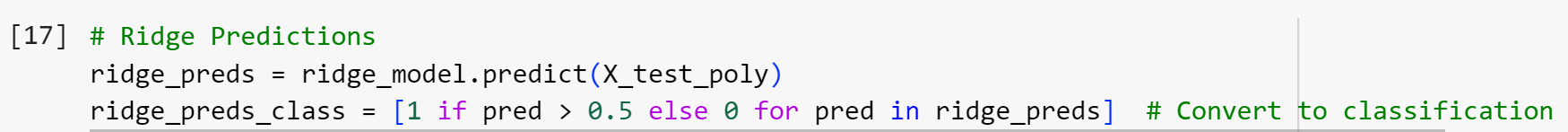
Output :



1. Model Training and Testing:

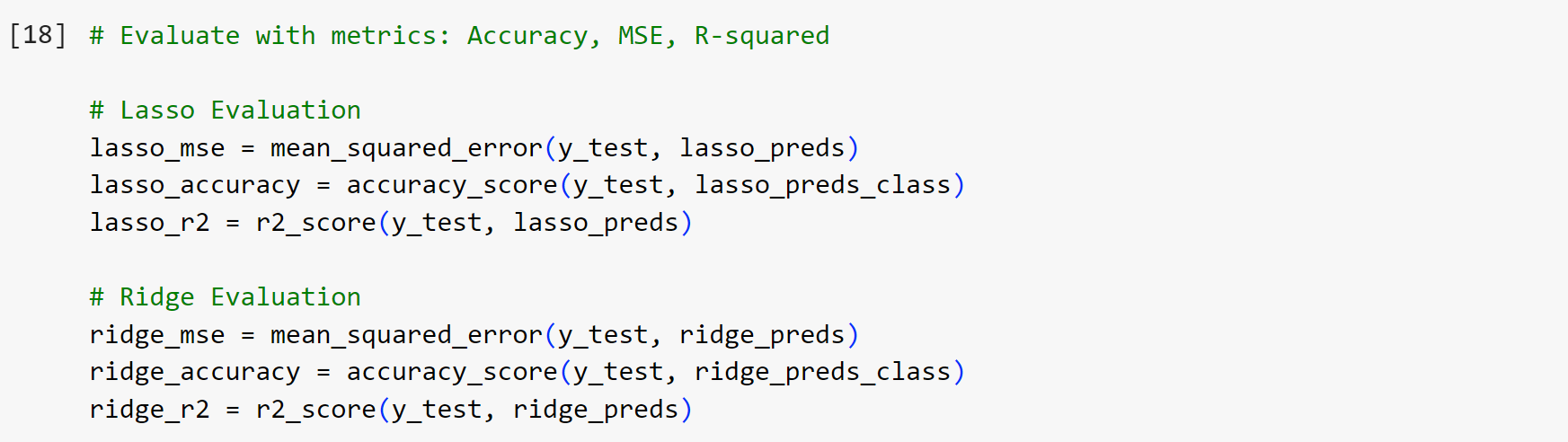
* Train both models on the training dataset.





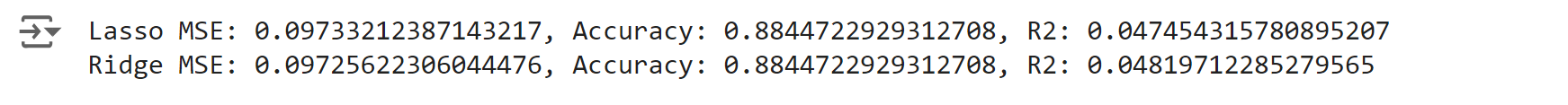
* Test them on the testing dataset and compare performance using

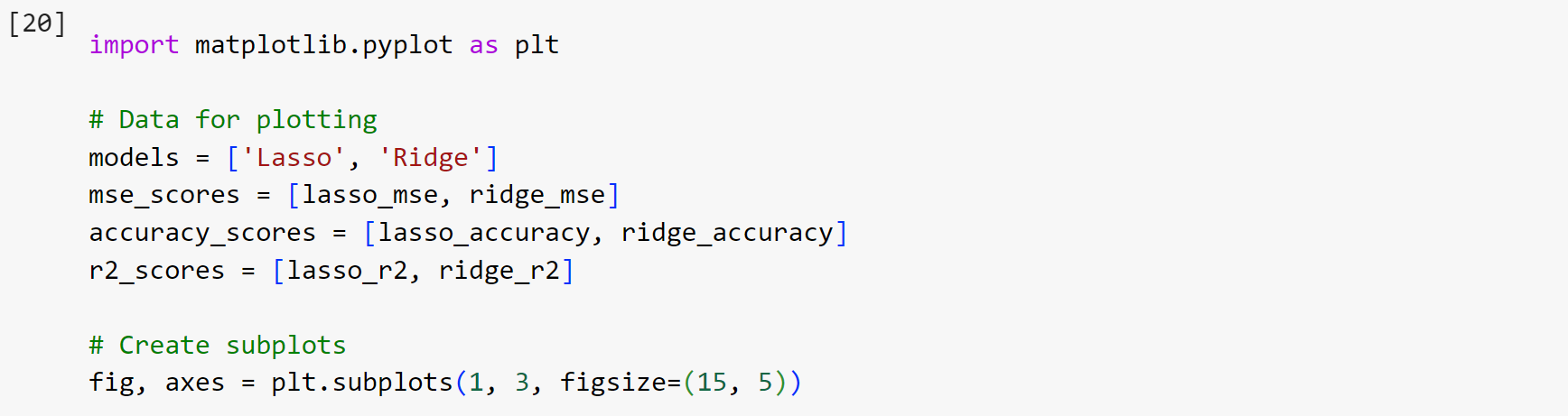
evaluation metrics like Mean Squared Error (MSE) and R-squared.

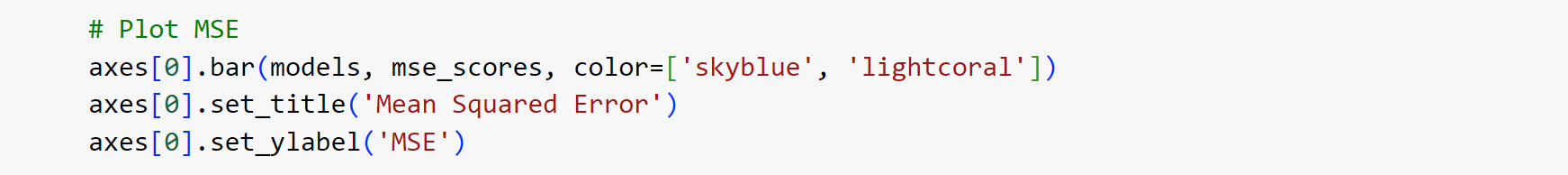




Output :

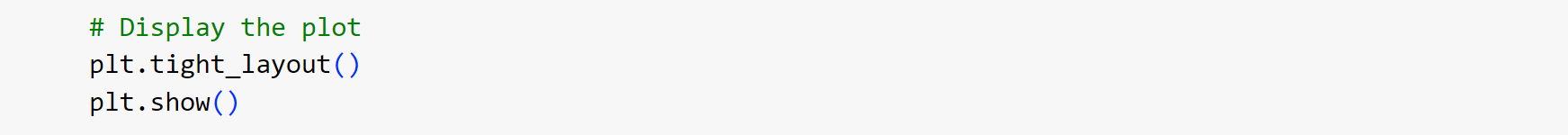












Output :

