**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“JnanaSangama”, Belgaum -590014, Karnataka.**



**LAB REPORT**

**on**

**Machine Learning**

***Submitted by:***

**MEGHA SURESHA**

**(1BM21CS262)**

**Under the Guidance of**

**Sunayana S**

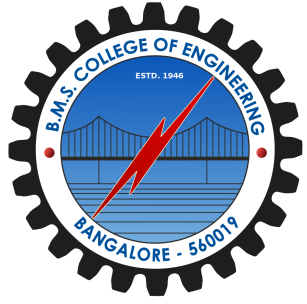
**Assistant Professor, BMSCE**

***in partial fulfillment for the award of the degree of***

**BACHELOR OF ENGINEERING**

***in***

**COMPUTER SCIENCE AND ENGINEERING**



**B.M.S. COLLEGE OF ENGINEERING**

**(Autonomous Institution under VTU)**

**BENGALURU-560019**

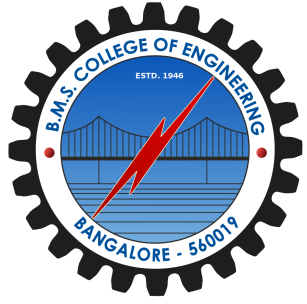
**March 2024 - June 2024**

**B. M. S. College of Engineering,**

**Bull Temple Road, Bangalore 560019**

(Affiliated To Visvesvaraya Technological University, Belgaum)

**Department of Computer Science and Engineering**



**CERTIFICATE**

This is to certify that the Lab work entitled “**Machine Learning**” carried out by **Megha Suresha (1BM21CS262),** who is a bonafide student of **B. M. S. College of Engineering.** It is in partial fulfillment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum during the year 2024. The Lab report has been approved as it satisfies the academic requirements in respect of **Machine Learning - (22CS6PCMAL)** work prescribed for the said degree.

**Sunayana S**              **Dr. Jyothi S Nayak**

Associate Professor Professor and Head

Department of CSE Department of CSE

BMSCE, Bengaluru BMSCE, Bengaluru

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1. **Course Outcomes**

**CO1:** Apply machine learning techniques in computing systems.

**CO2:** Evaluate the model using metrics.

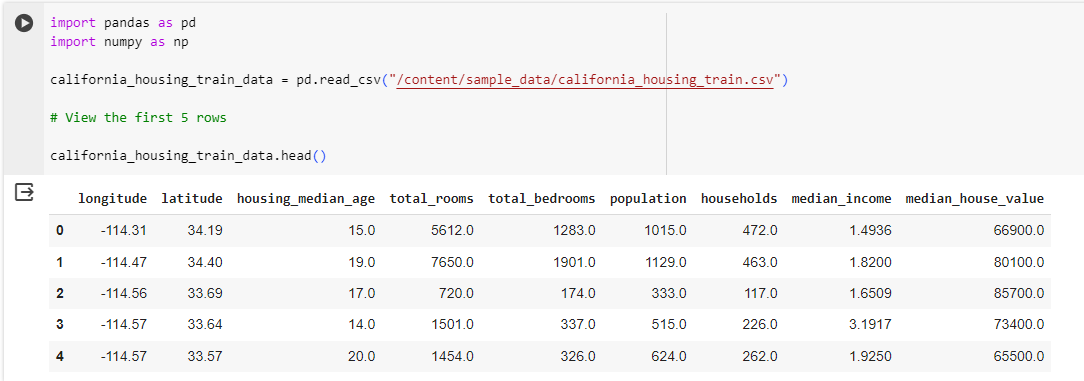
**CO3:** Design a model using machine learning to solve a problem.

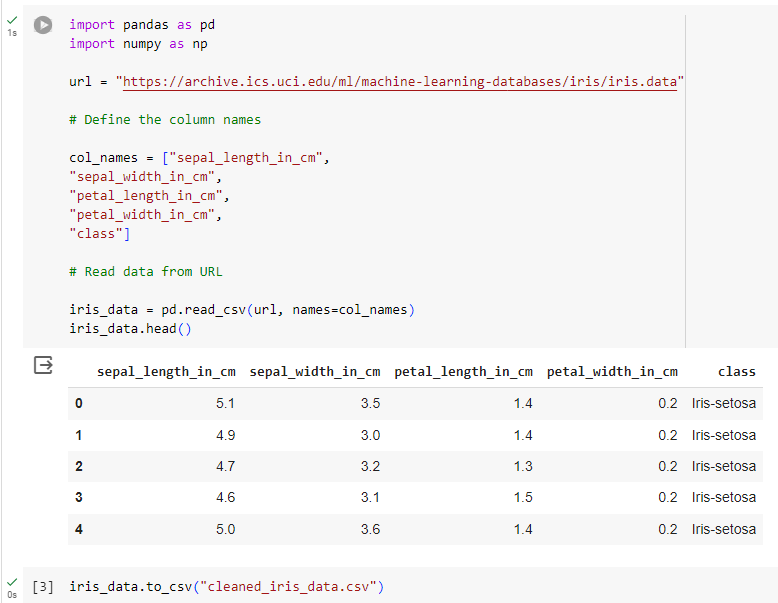
**CO4:** Conduct experiments to solve real-world problems using appropriate machine learning techniques

1. **Experiments**
   1. **Experiment - 1**
      1. **Question:**

Write a python program to import and export data using Pandas library functions.

* + 1. **Code with Output:**

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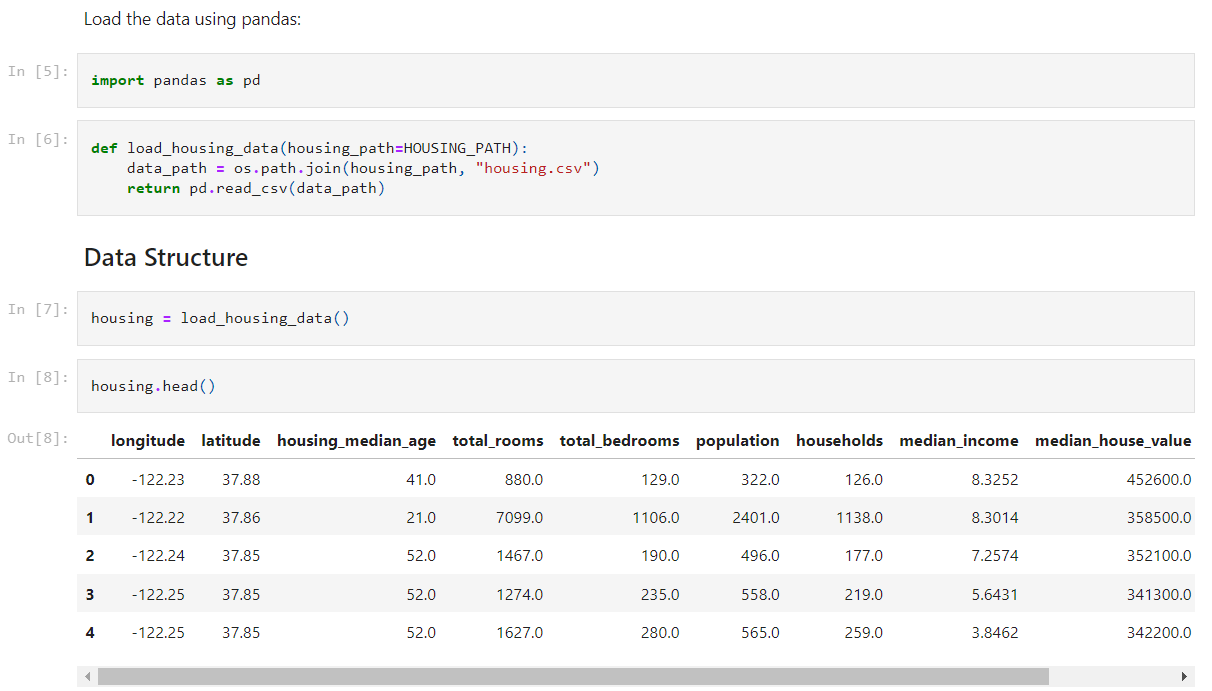
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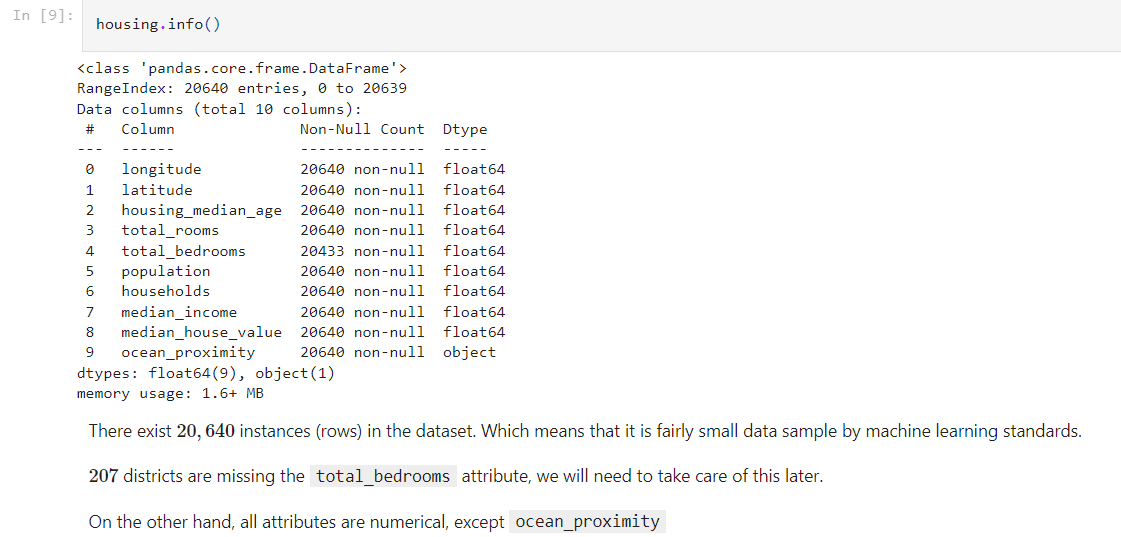
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     1. **Question:**

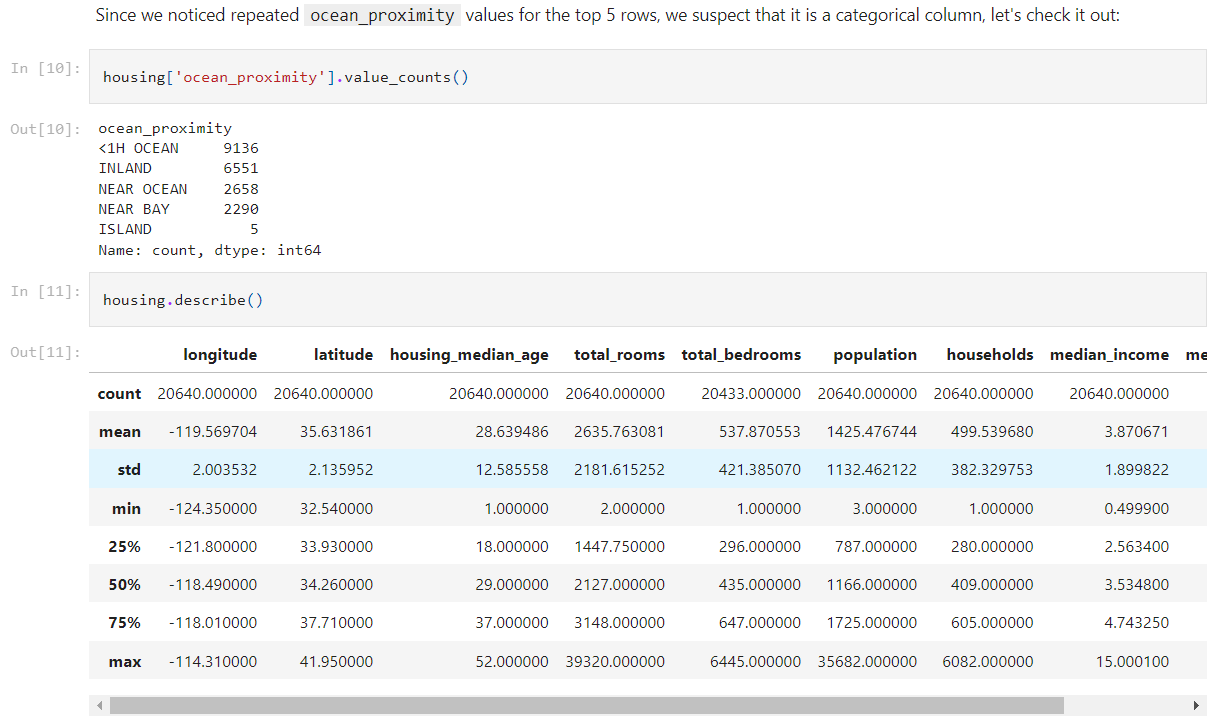
End-to-end ML Project.

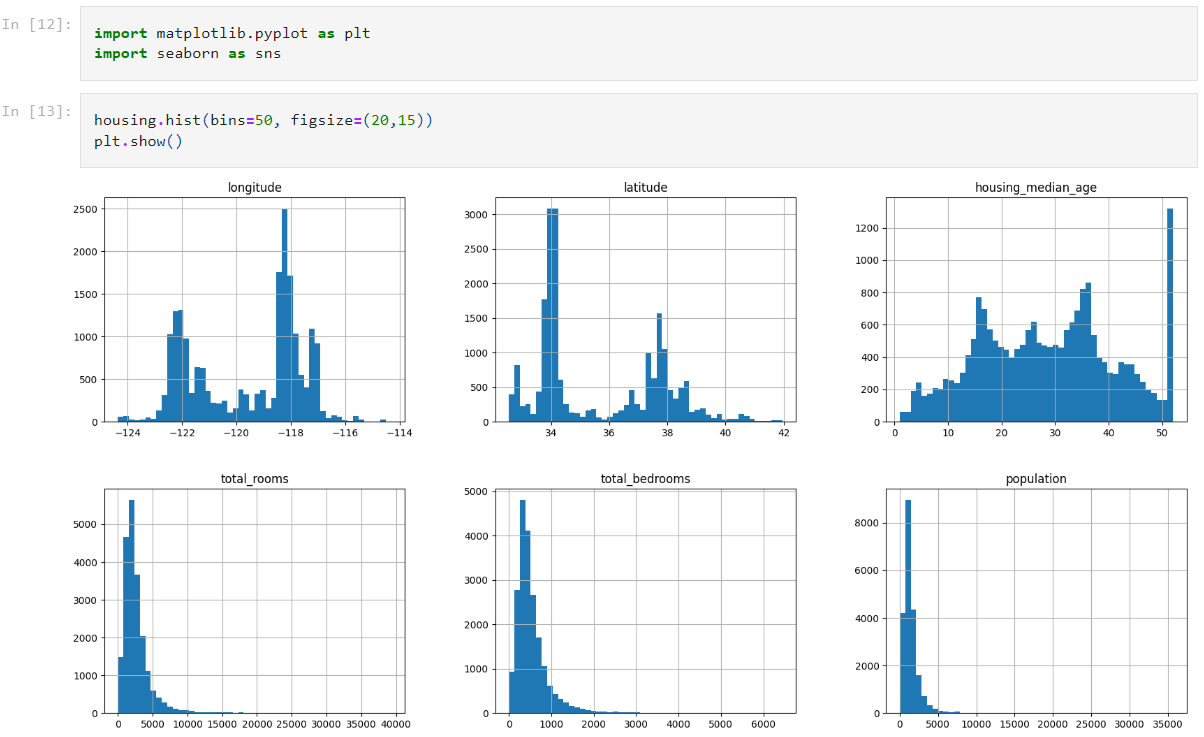
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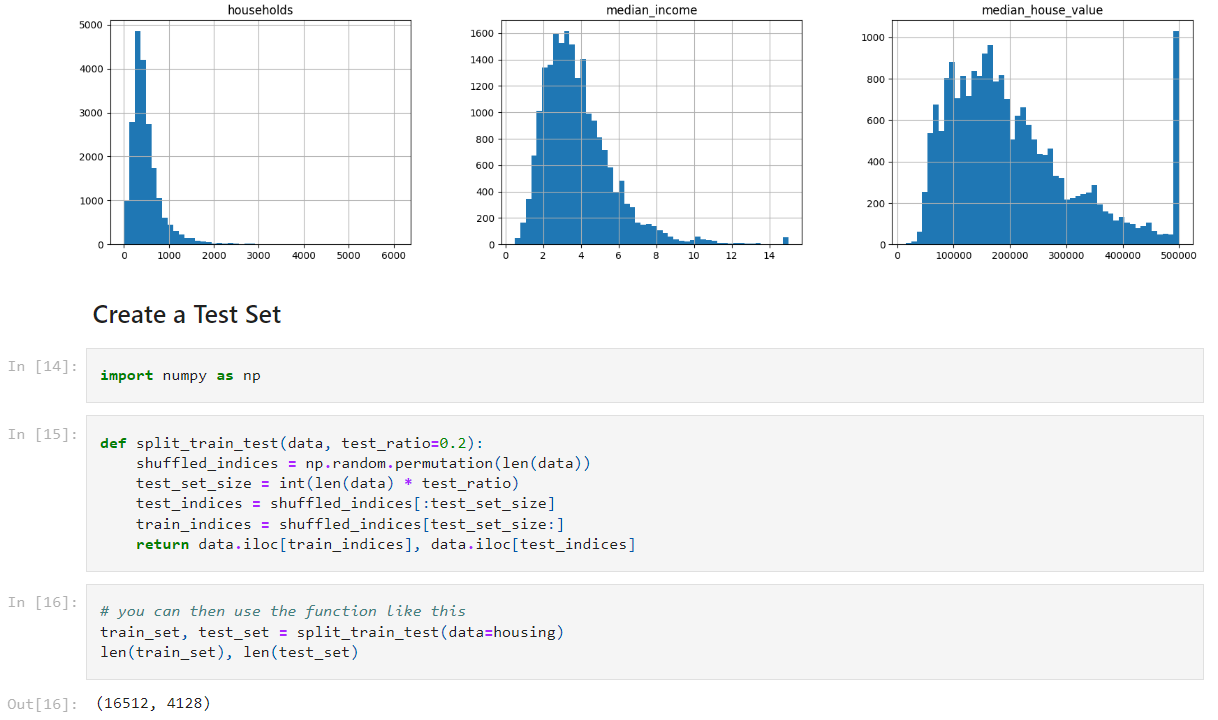
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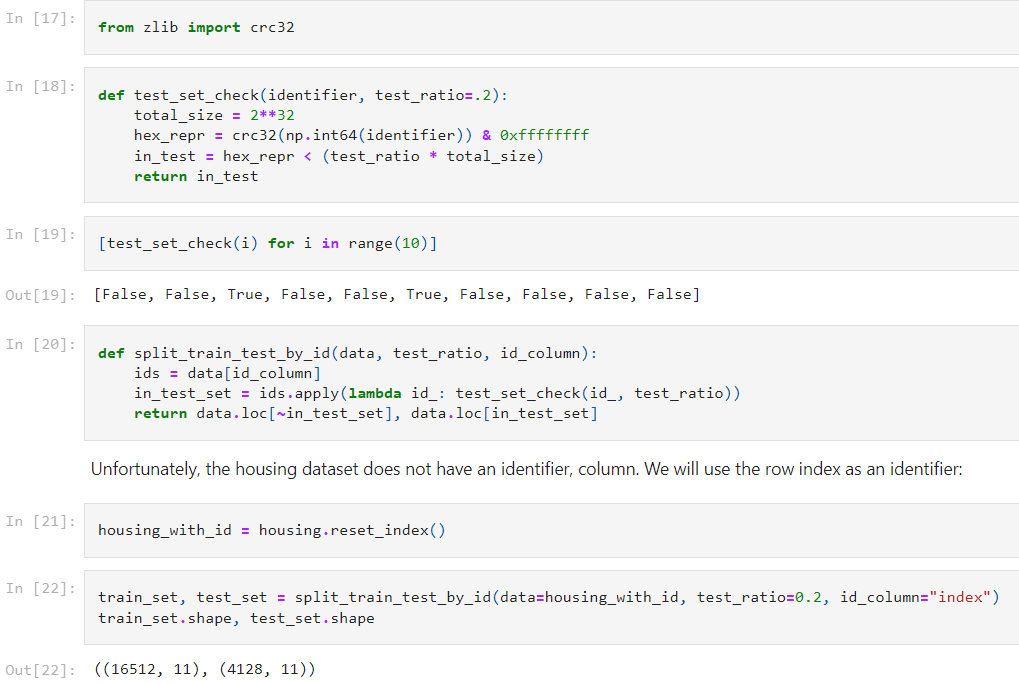
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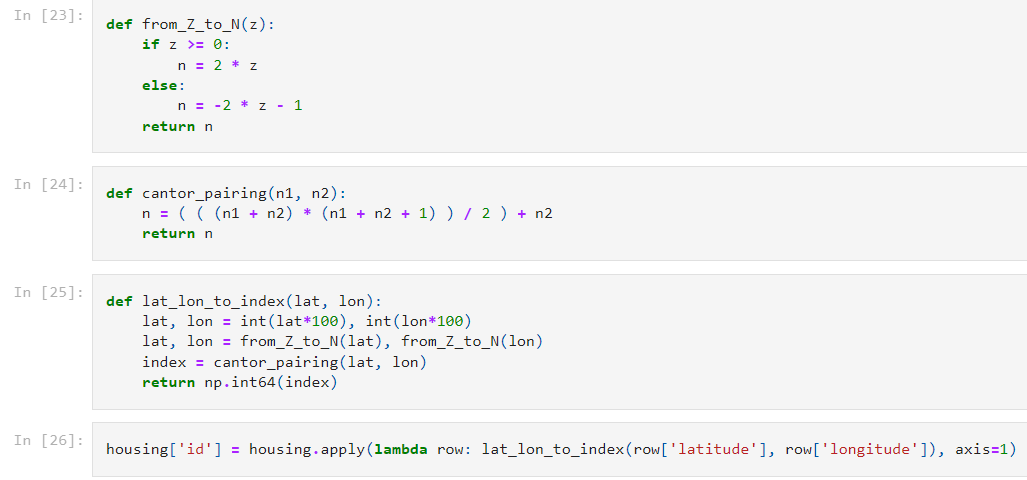
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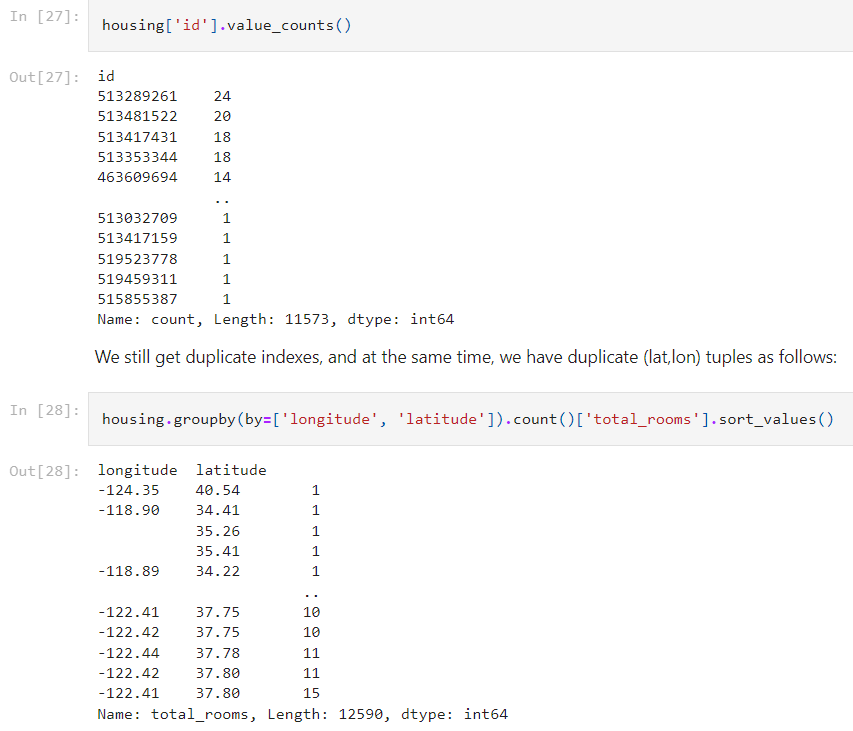
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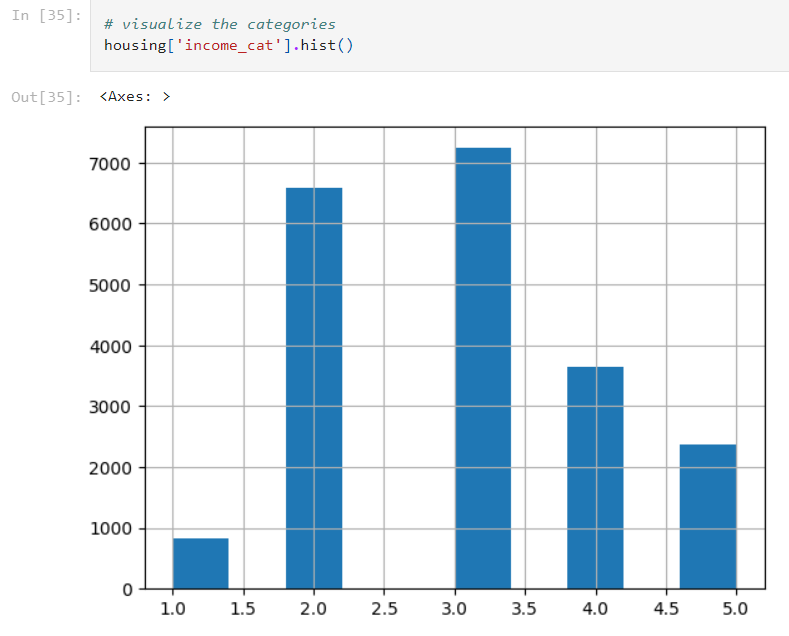
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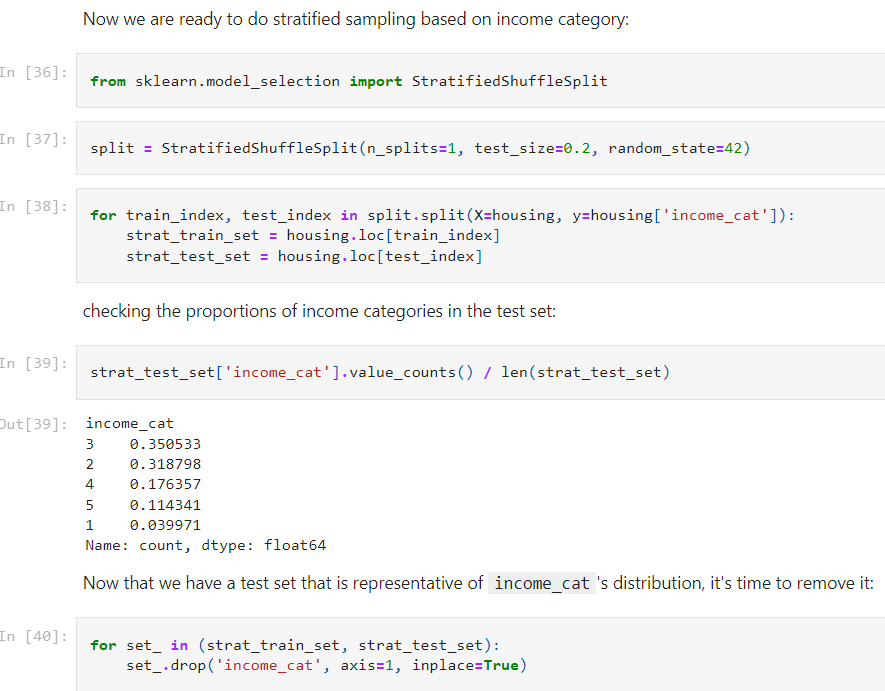
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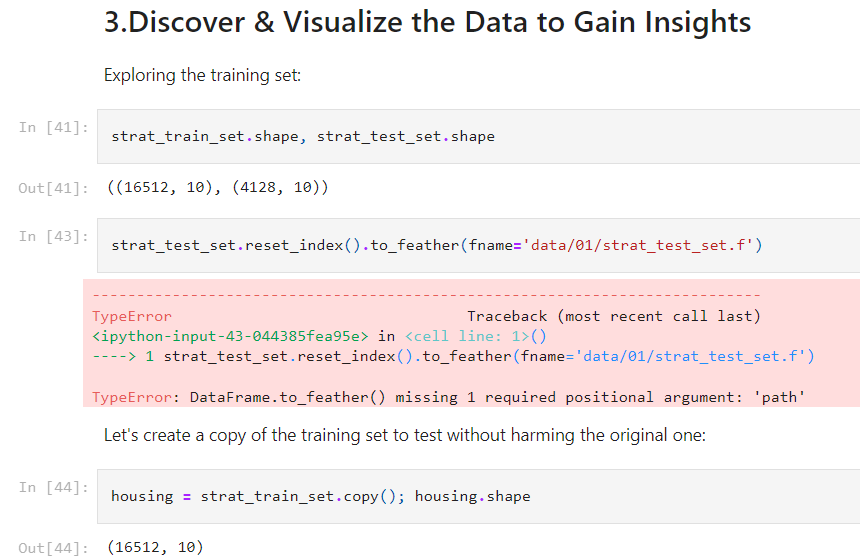
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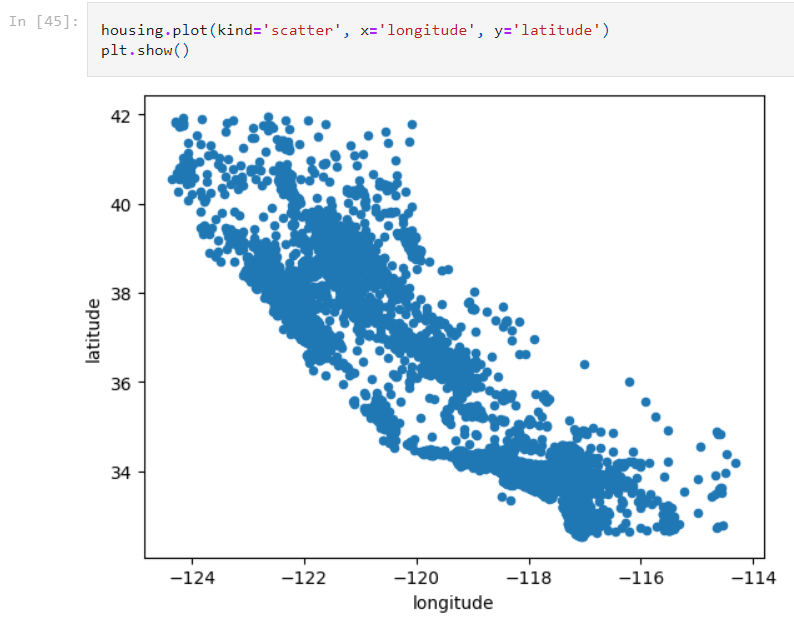
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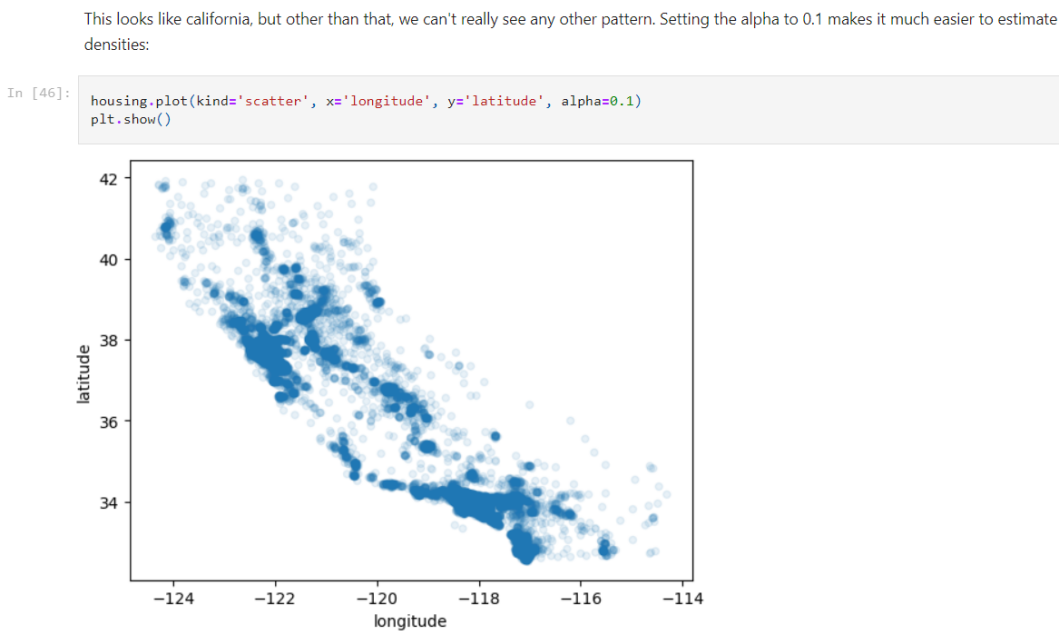
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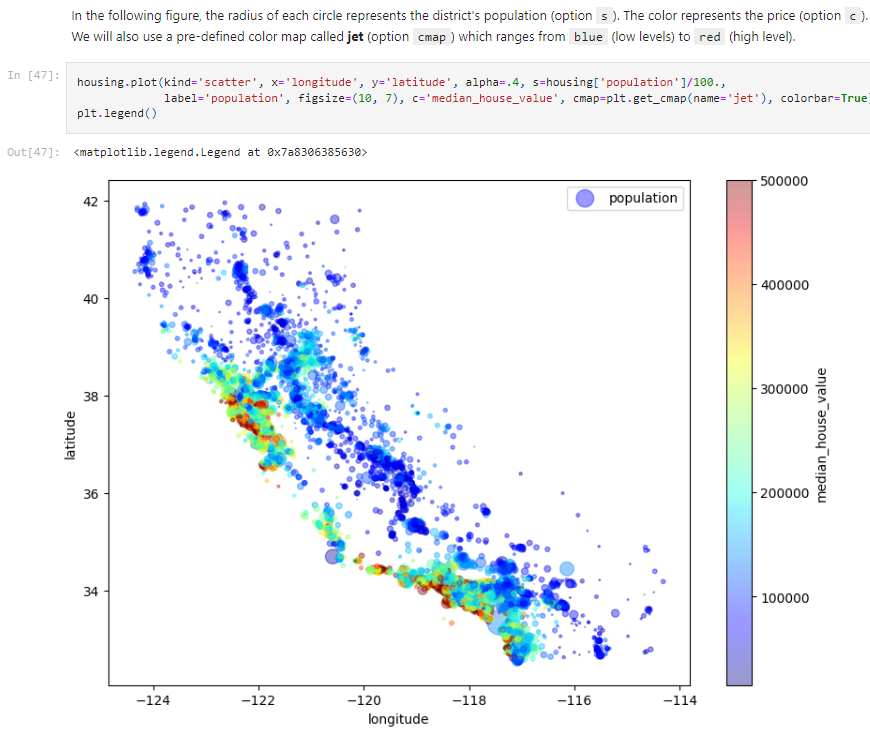
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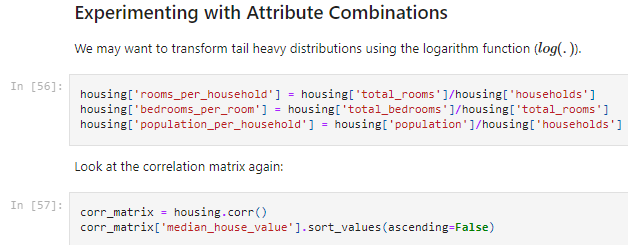
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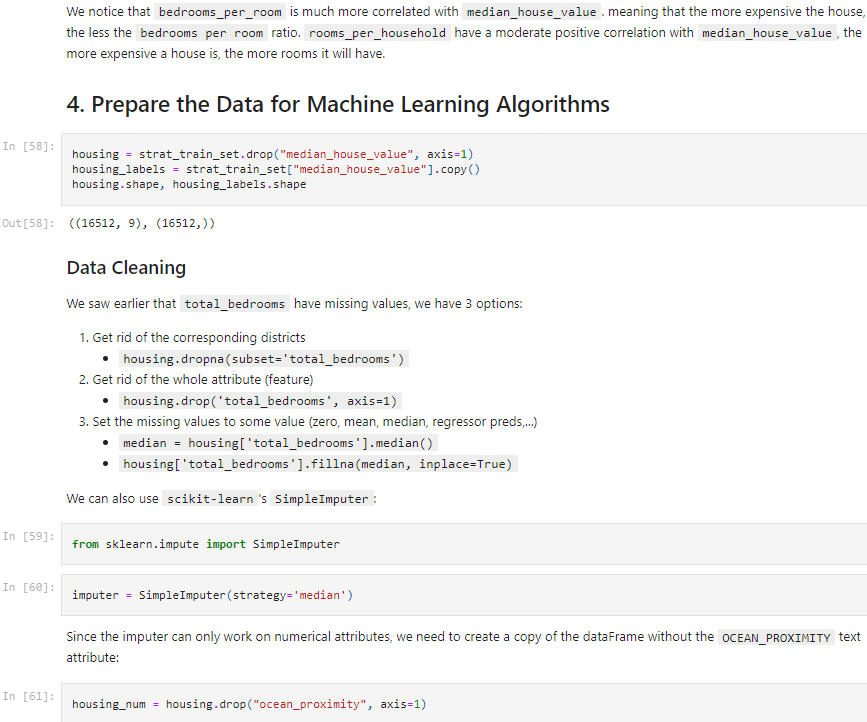
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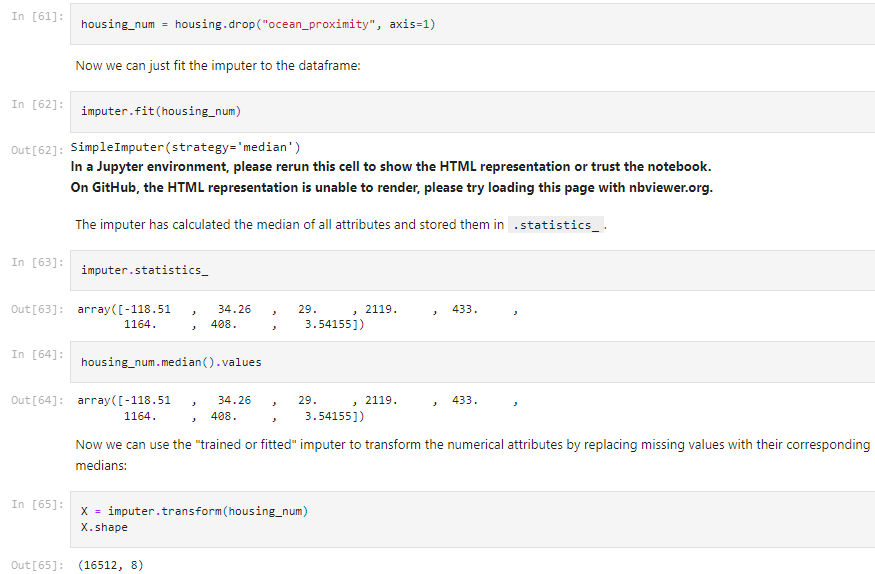
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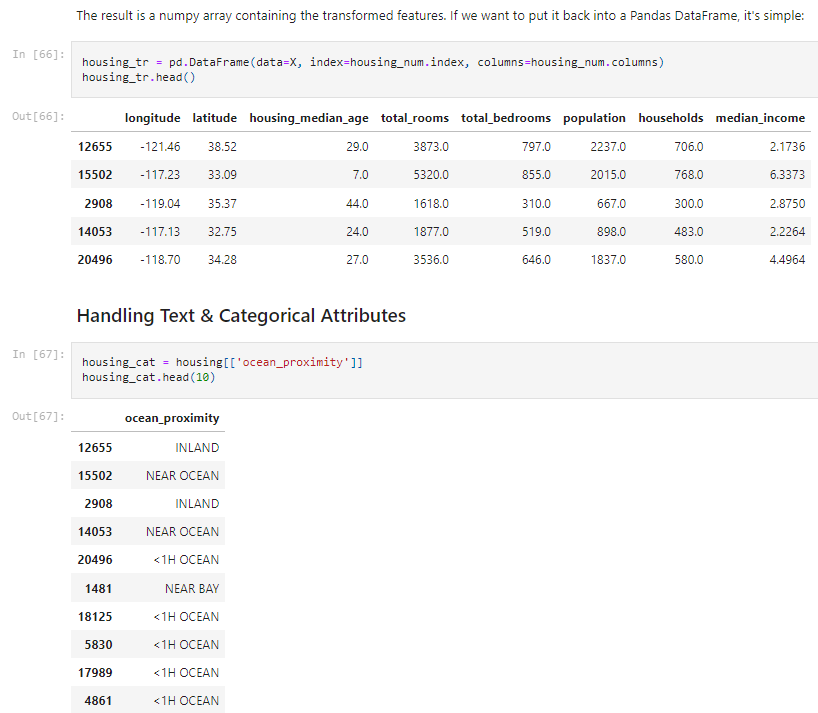
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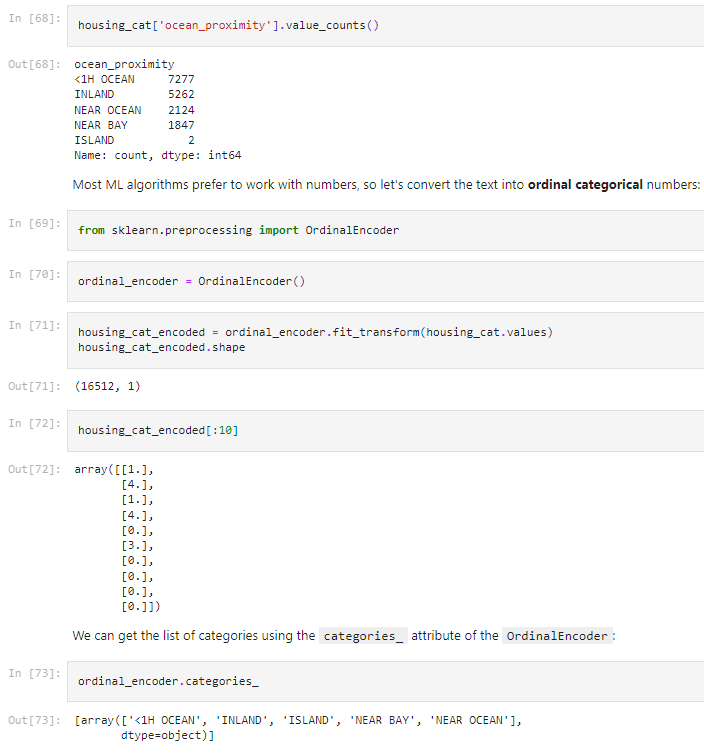
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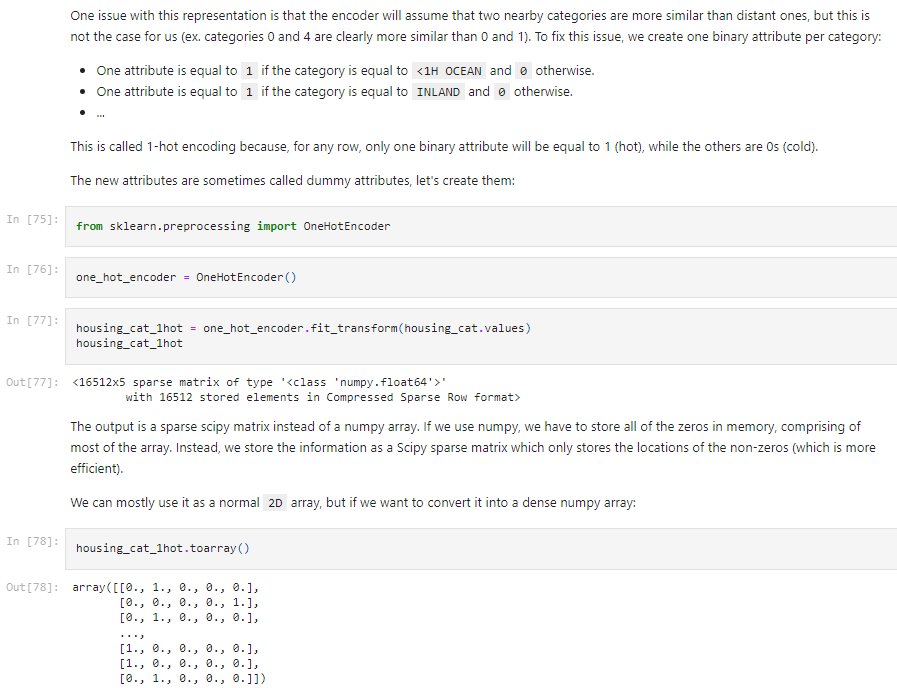
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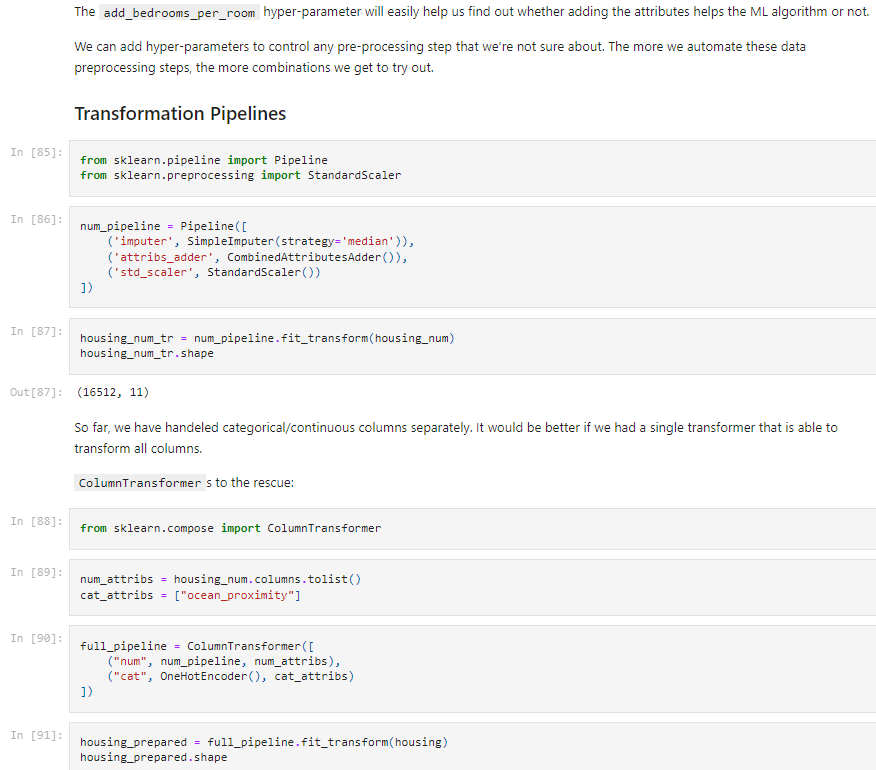
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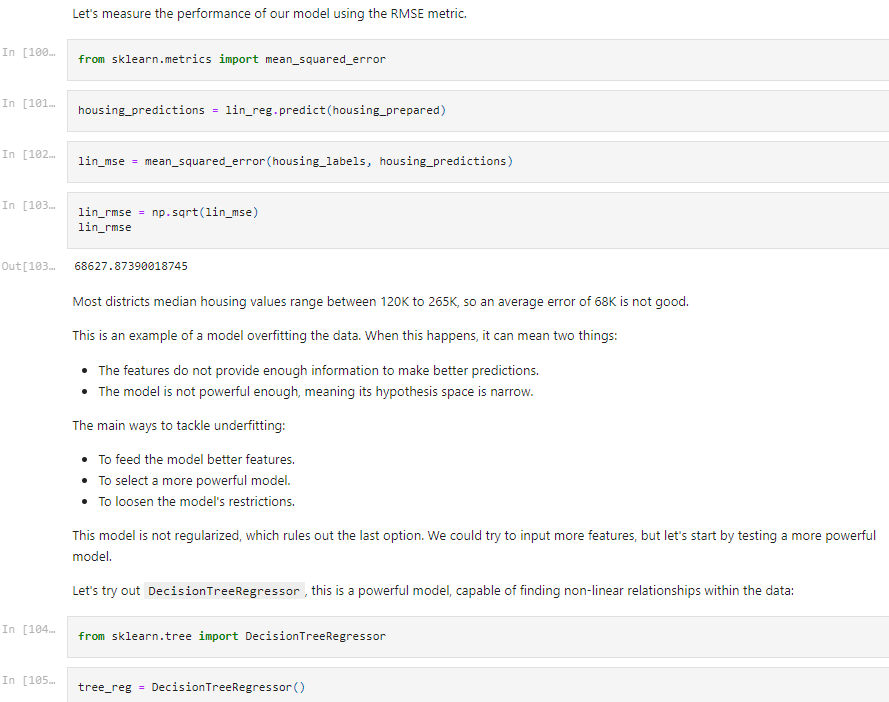
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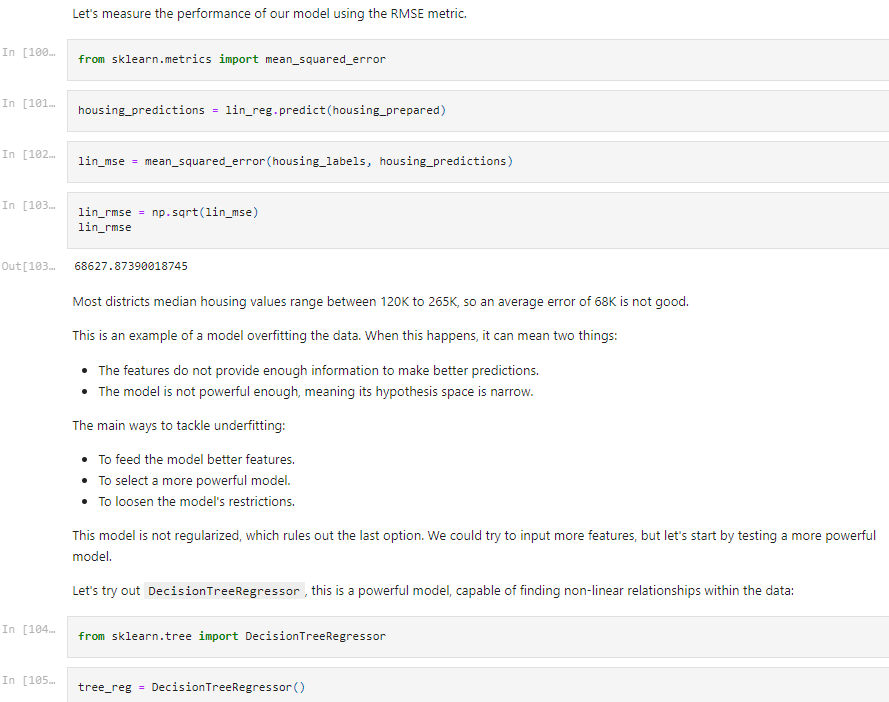
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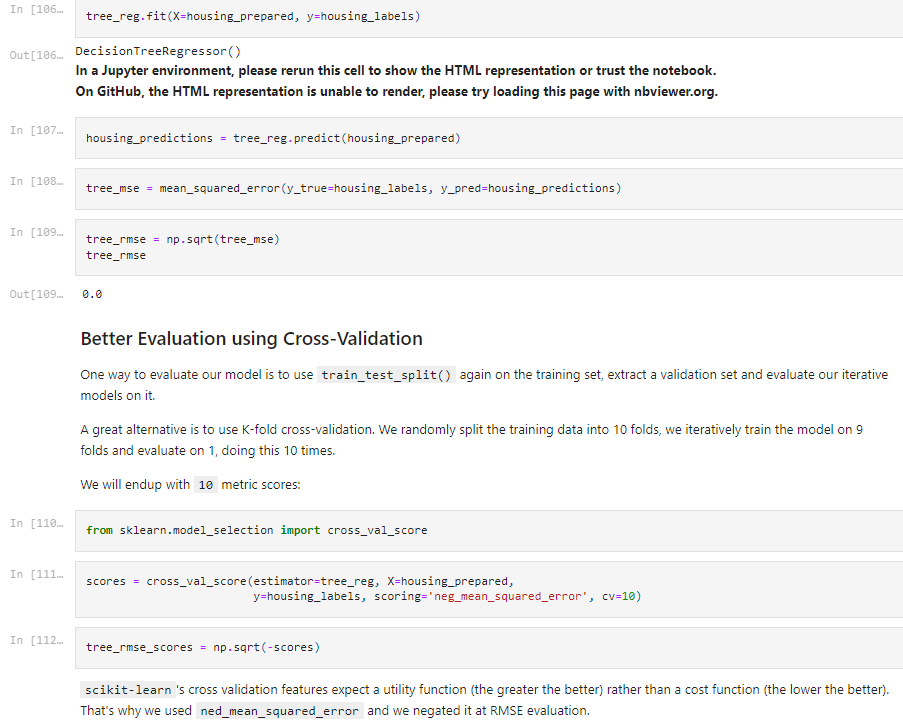
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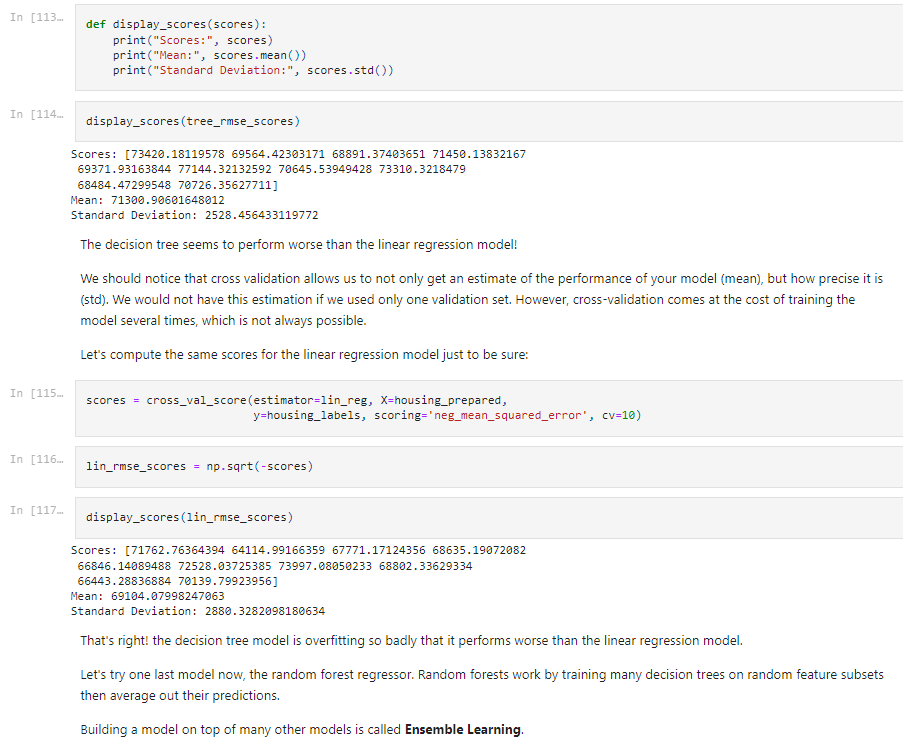
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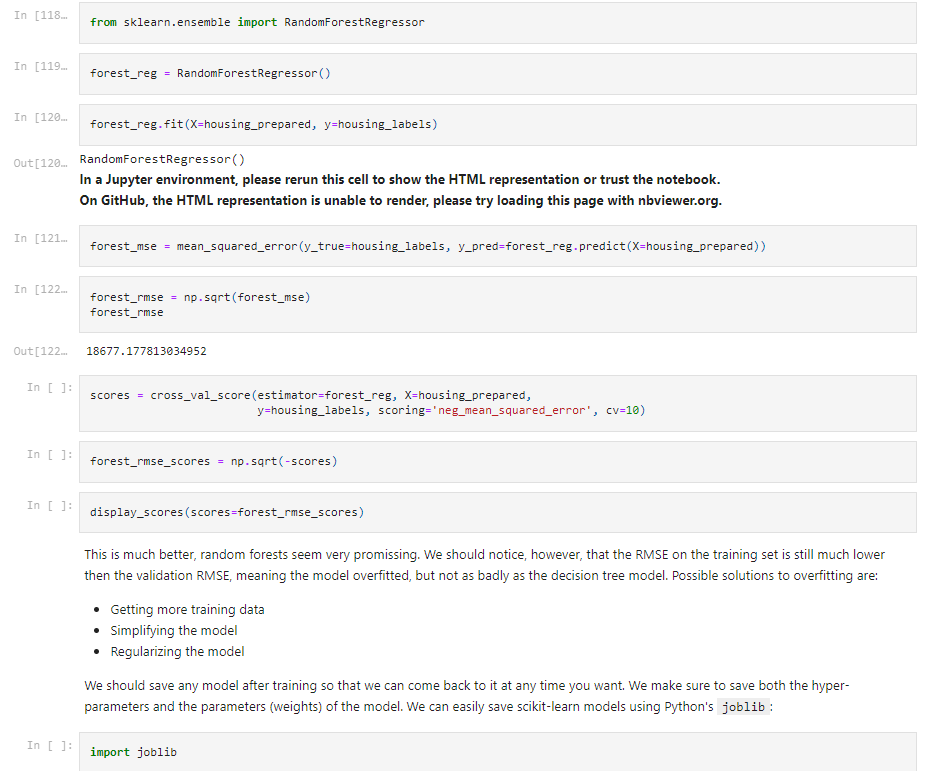
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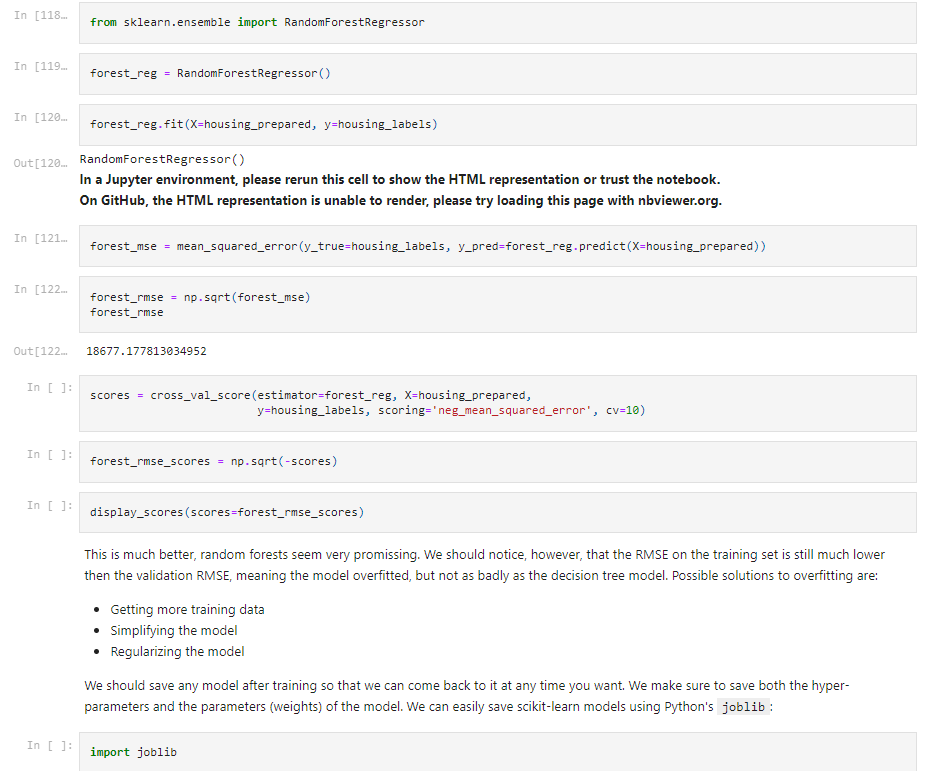
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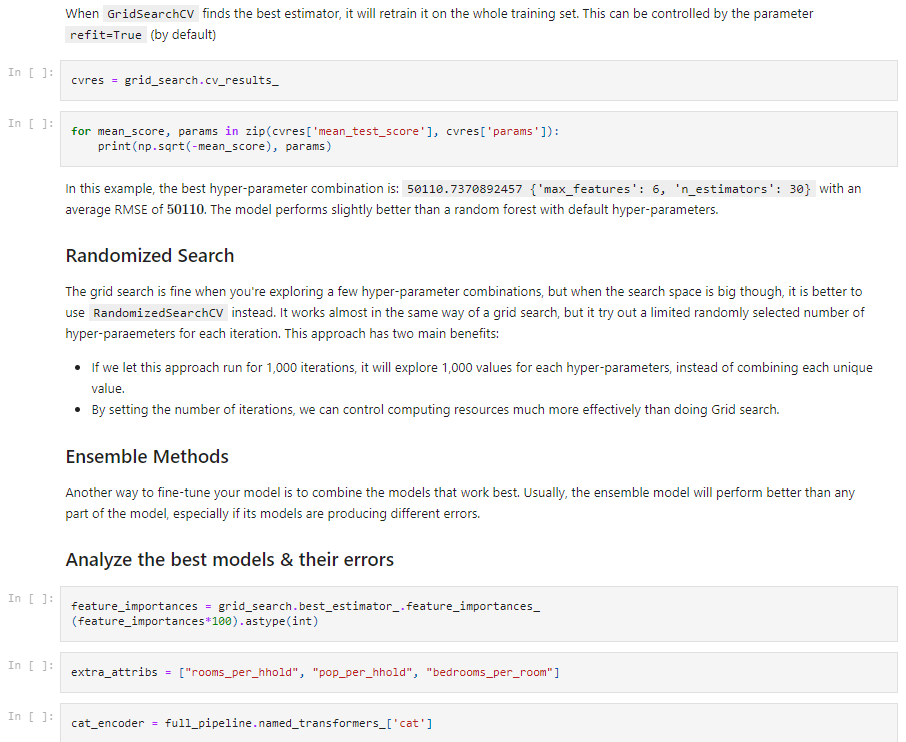
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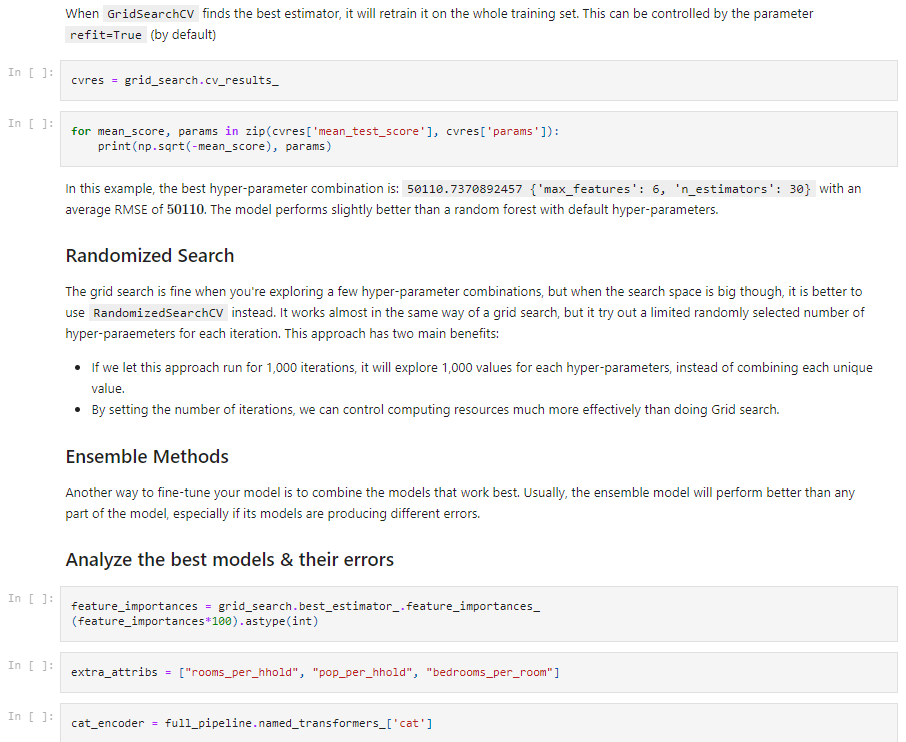
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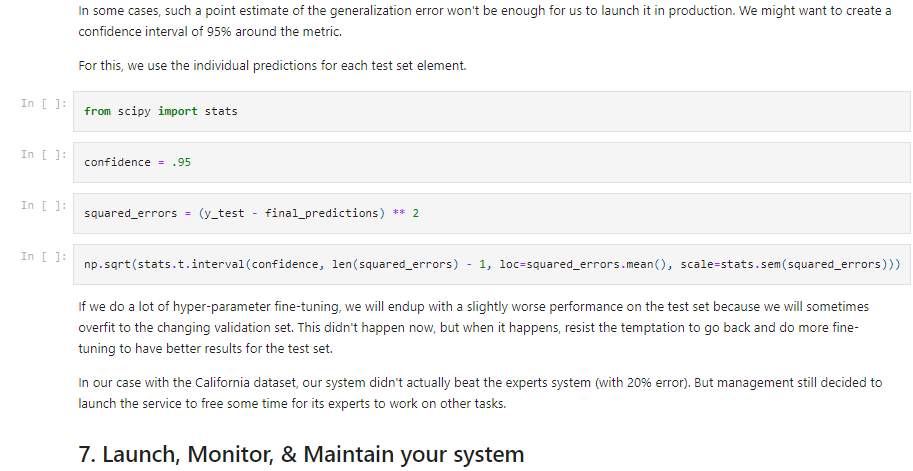
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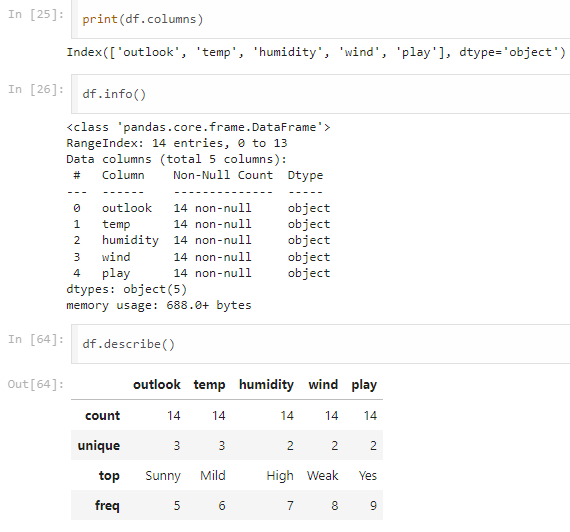
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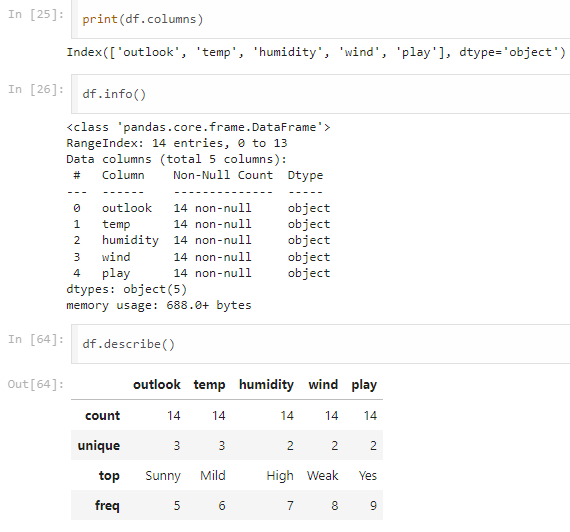
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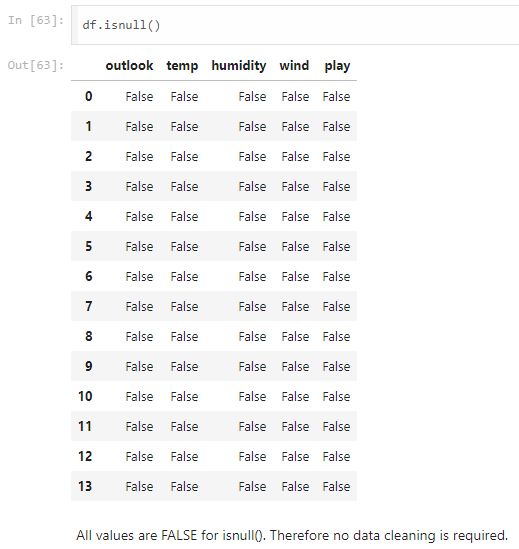
Use an appropriate data set for building the decision tree (ID3) and apply this knowledge to classify a new sample.

* + 1. **Code with Output:**

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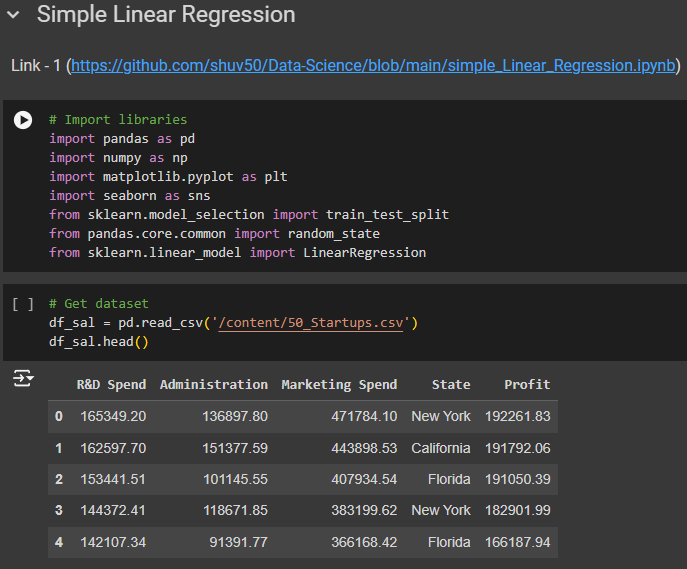
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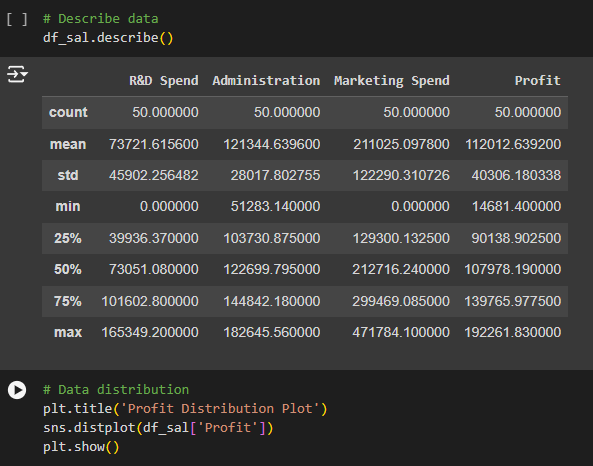
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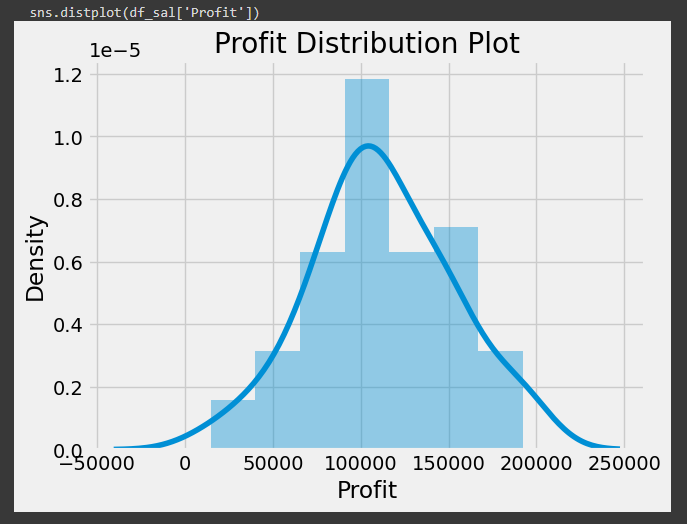
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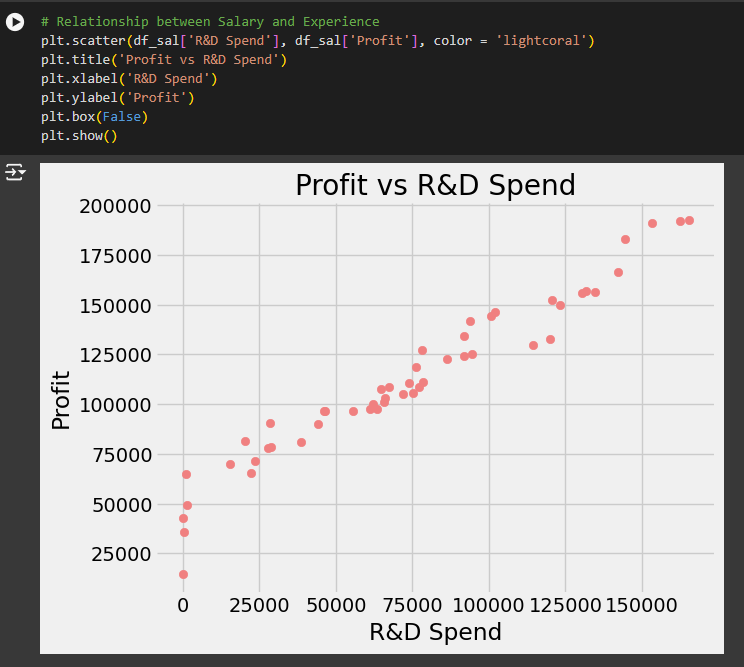
Implement Linear and Multi-Linear Regression algorithm using appropriate dataset.

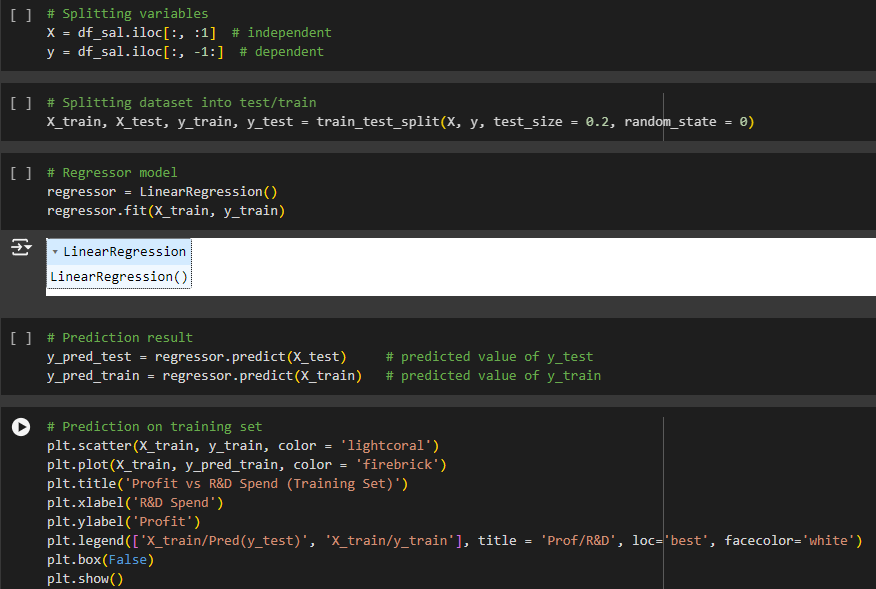
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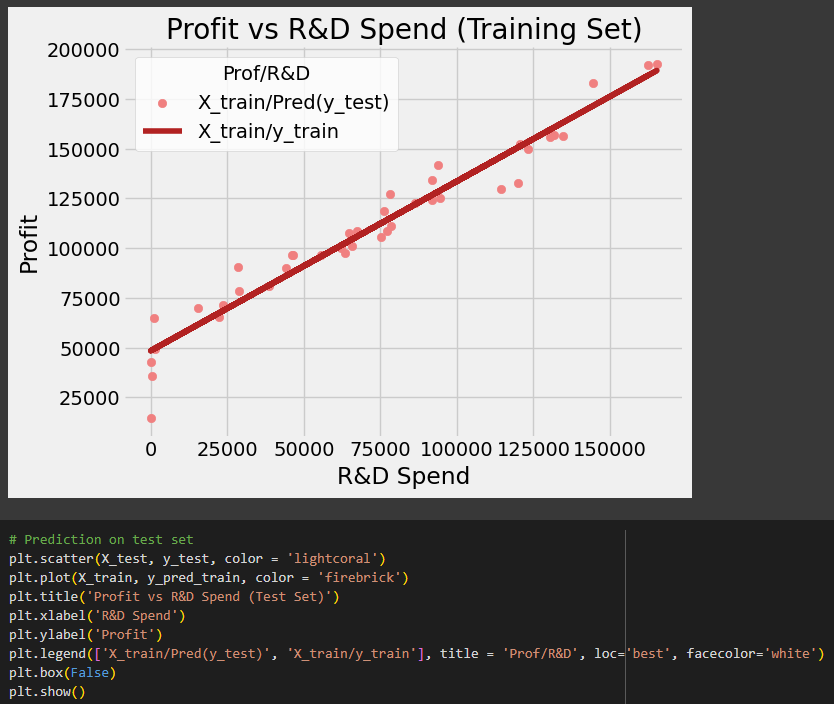
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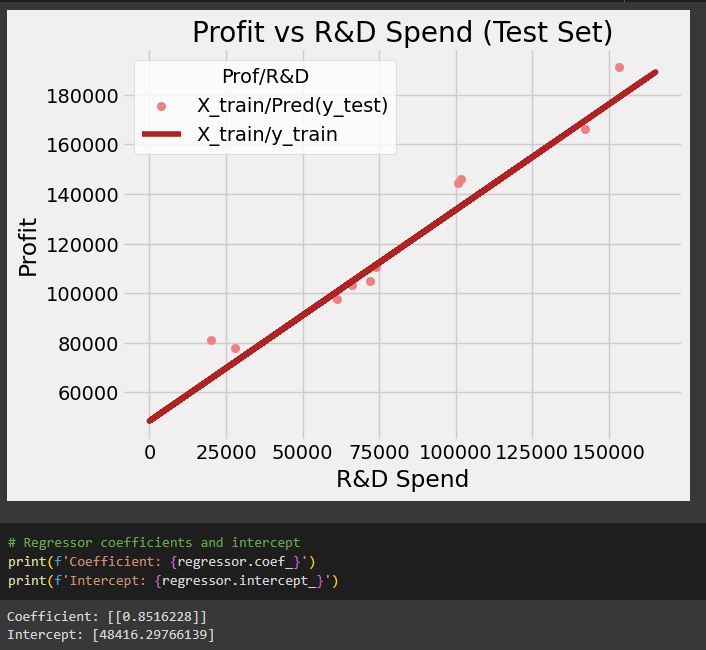
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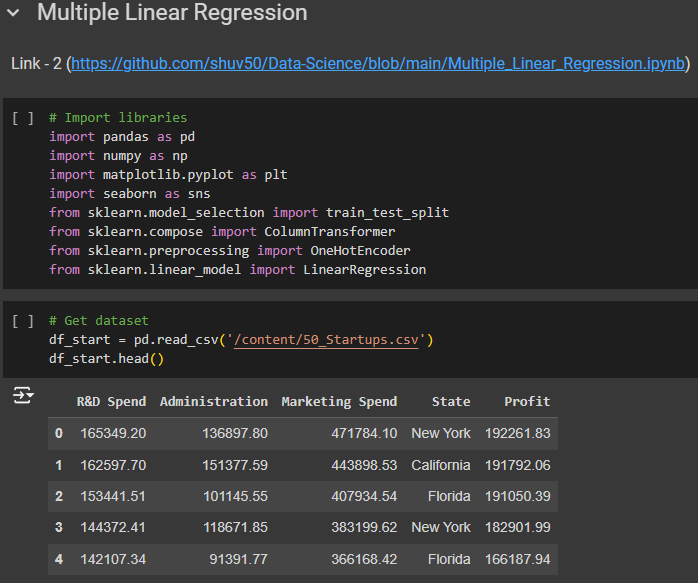
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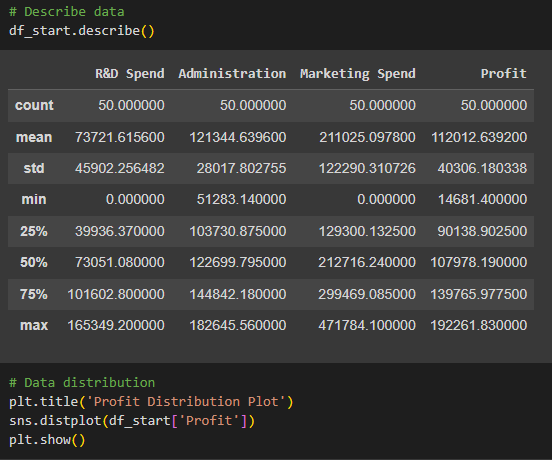
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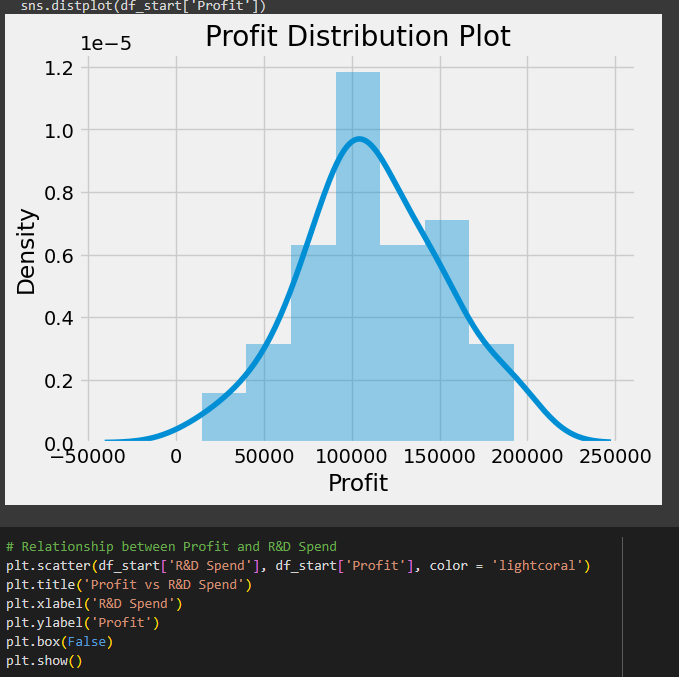
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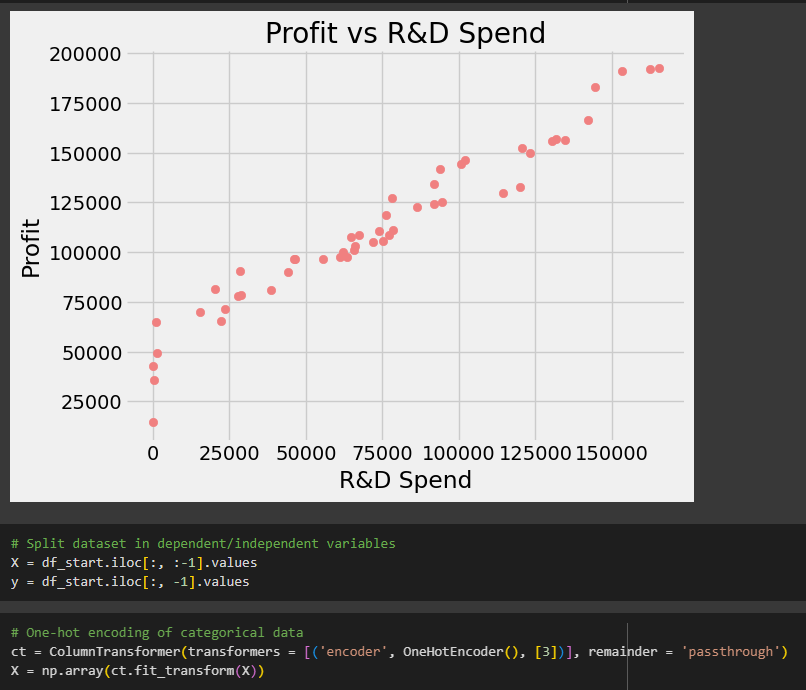
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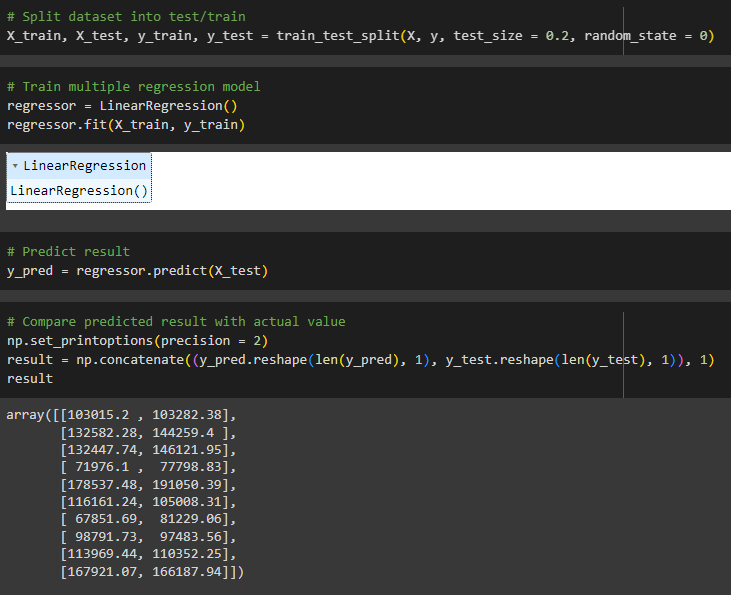
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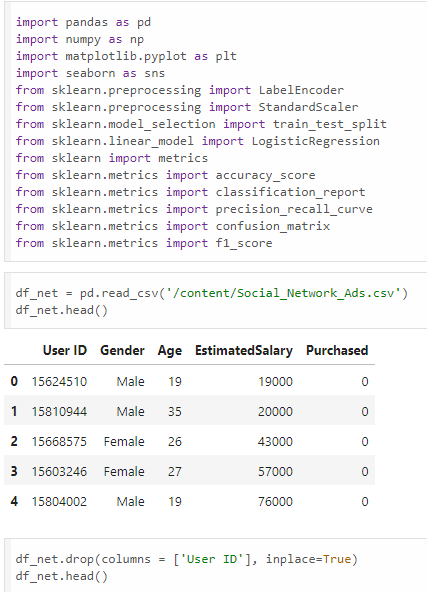
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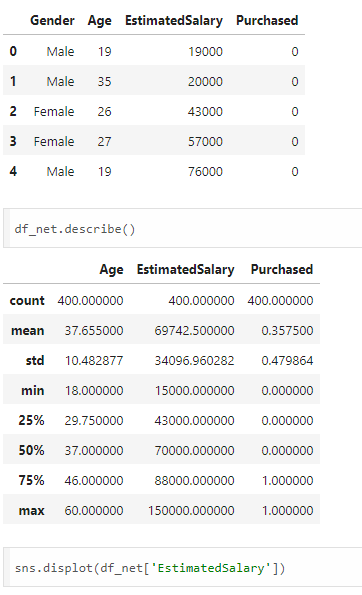
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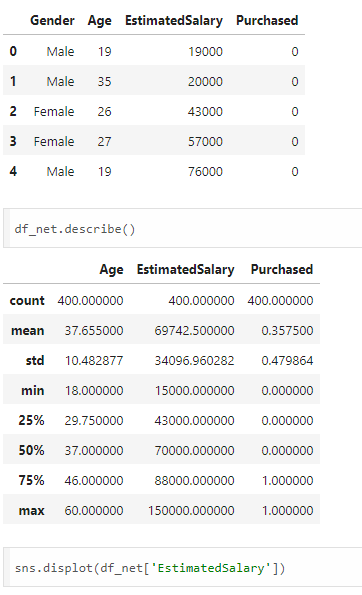
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     1. **Question:**

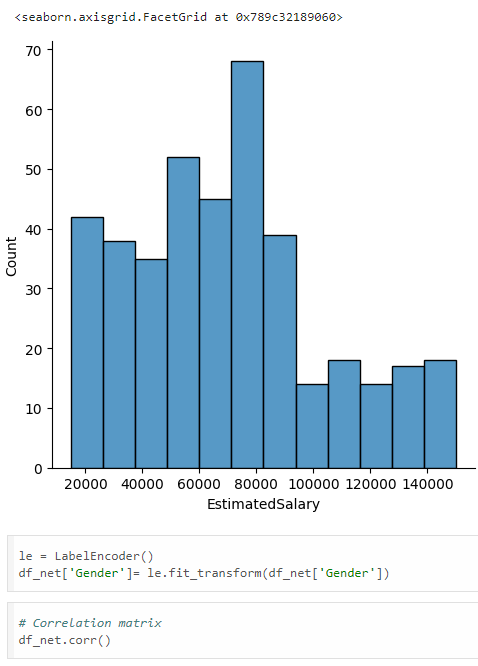
Build Logistic Regression Model for a given dataset.

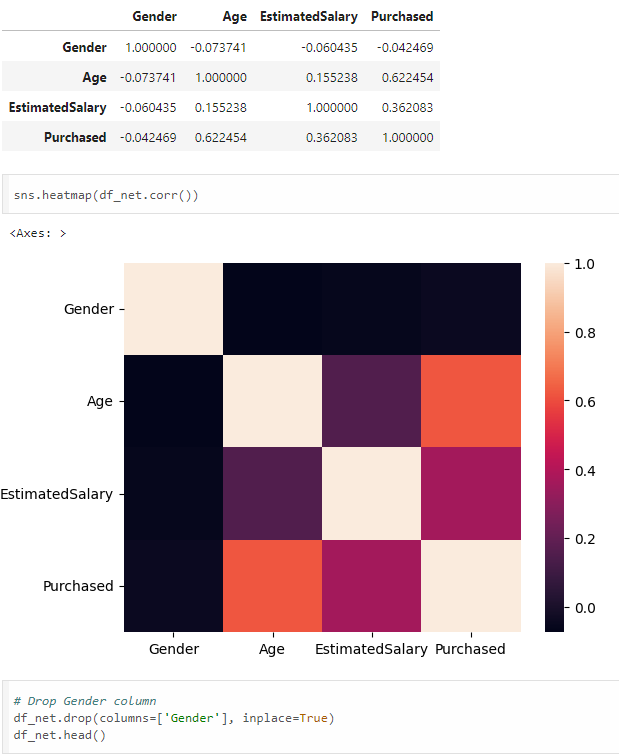
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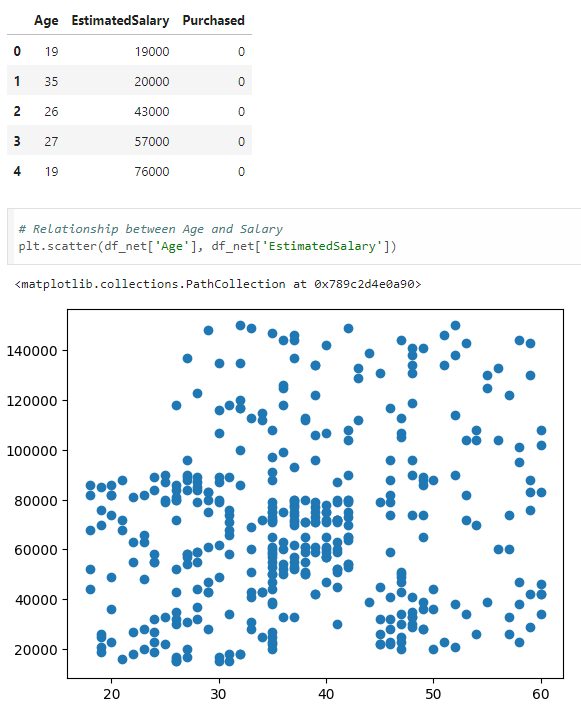
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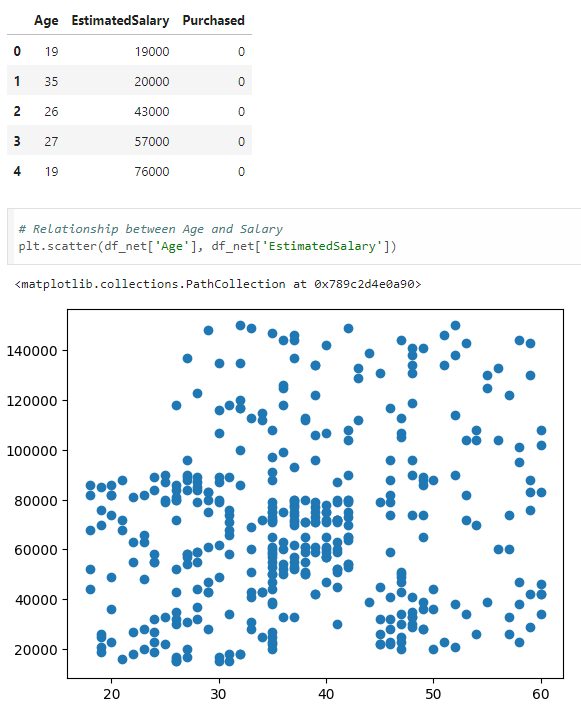
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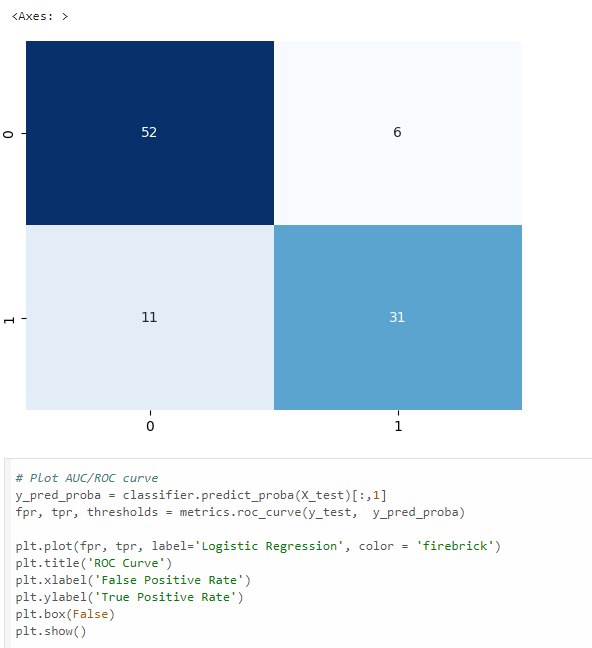
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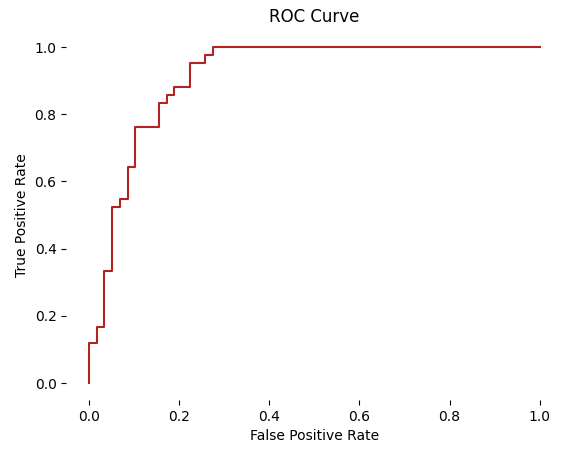
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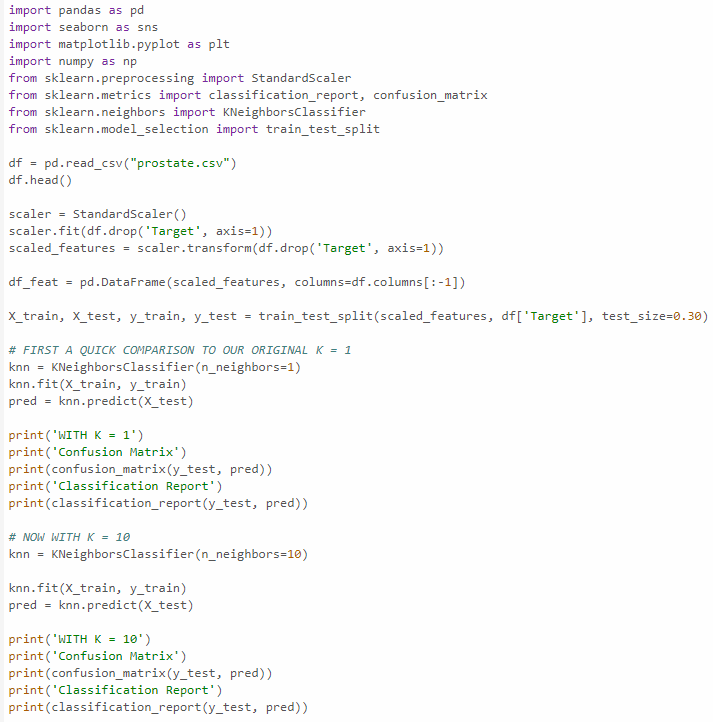
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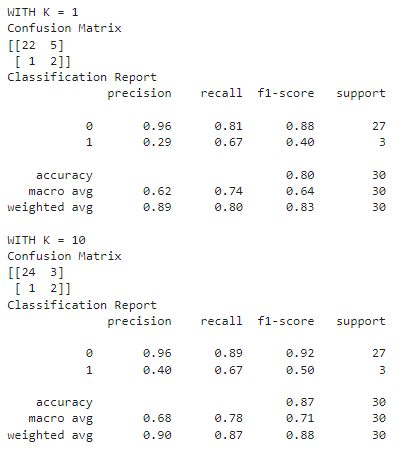
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* 1. **Experiment - 6**
     1. **Question:**

Build KNN Classification model for a given dataset.

* + 1. **Code with Output:**

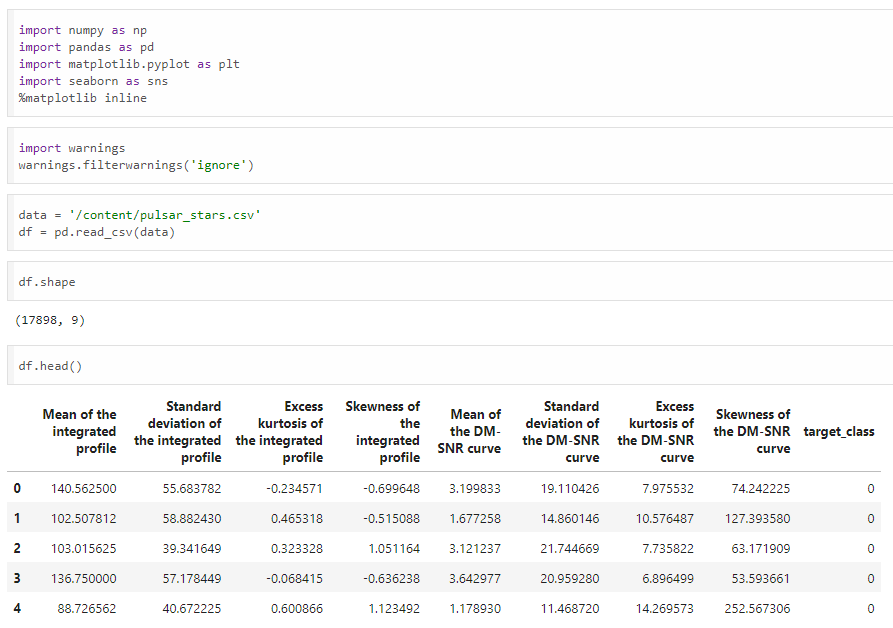
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     1. **Question:**

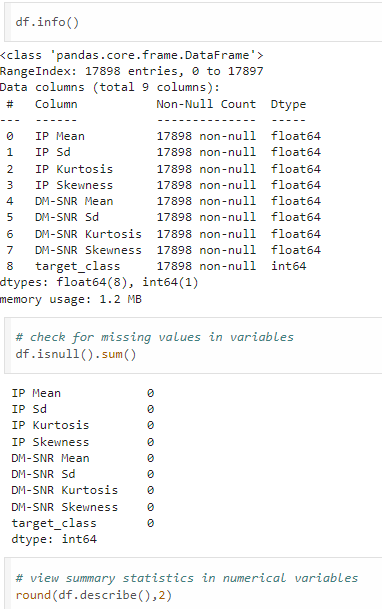
Build Support vector machine model for a given dataset.

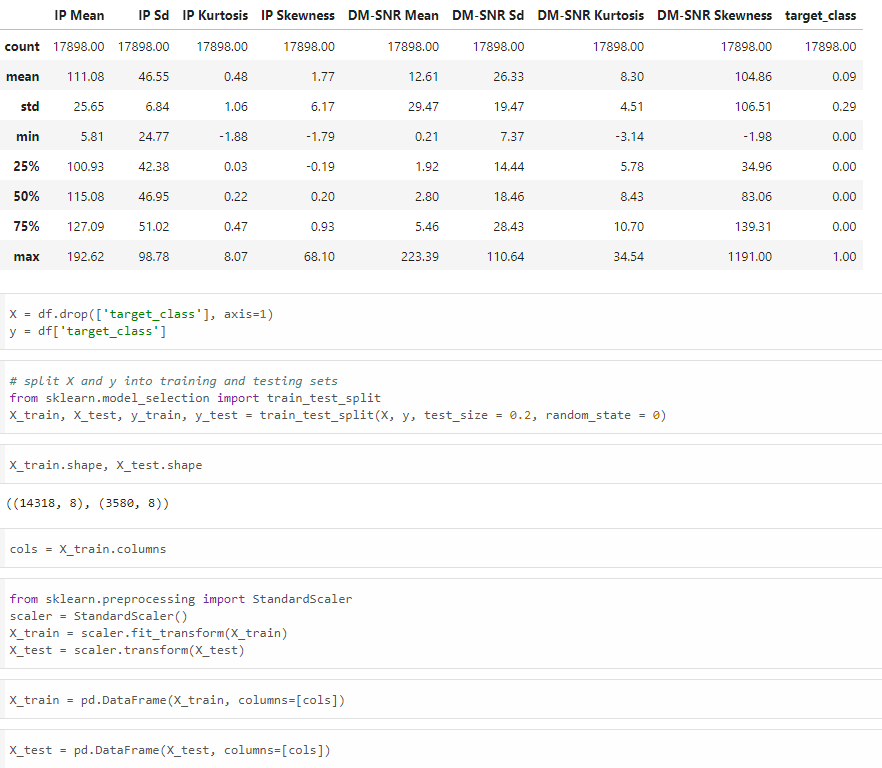
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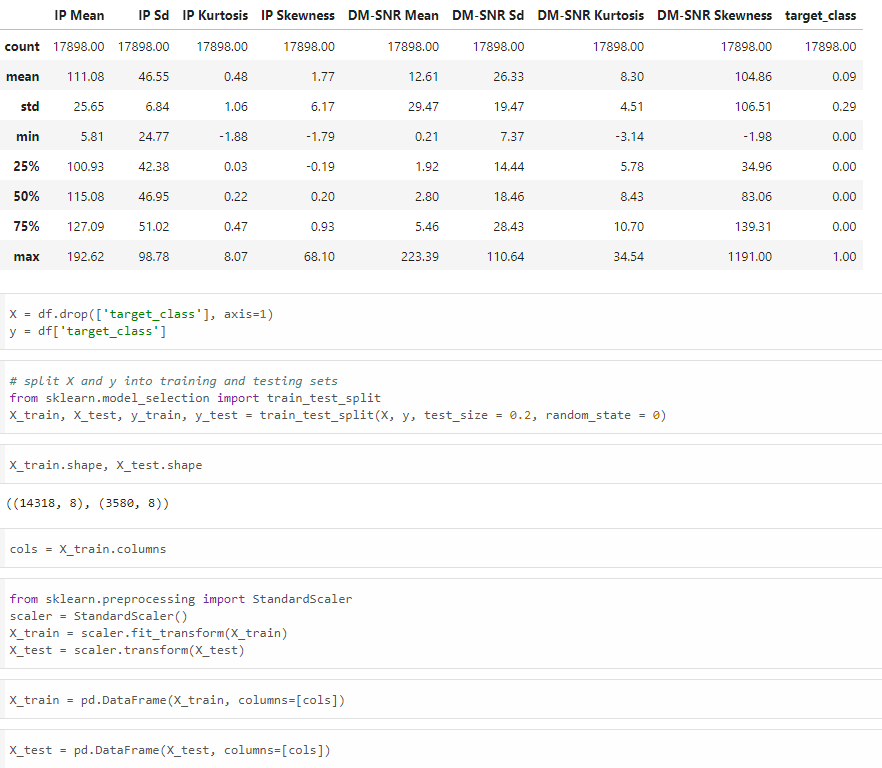
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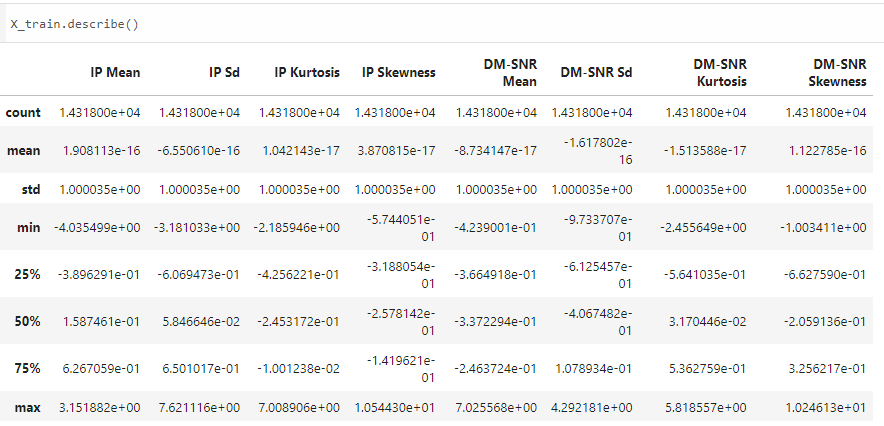
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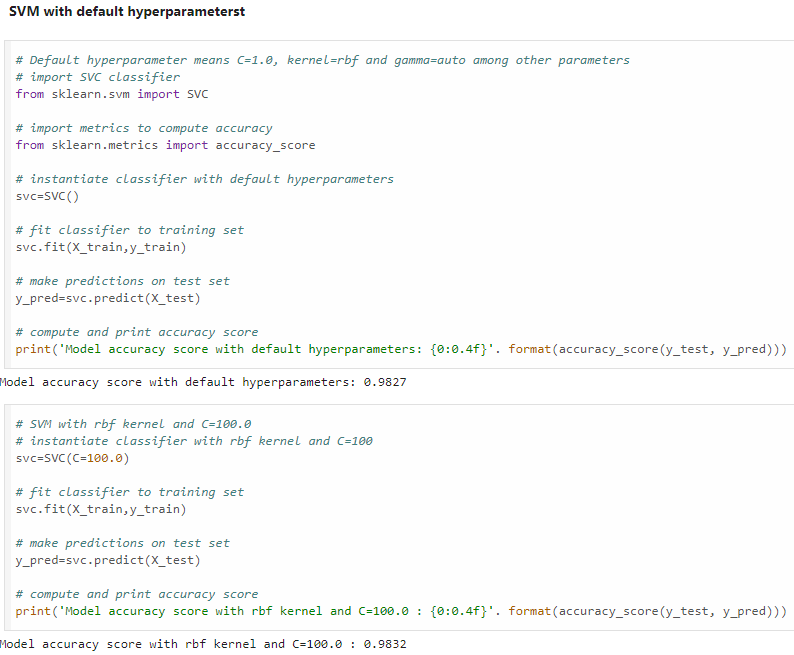
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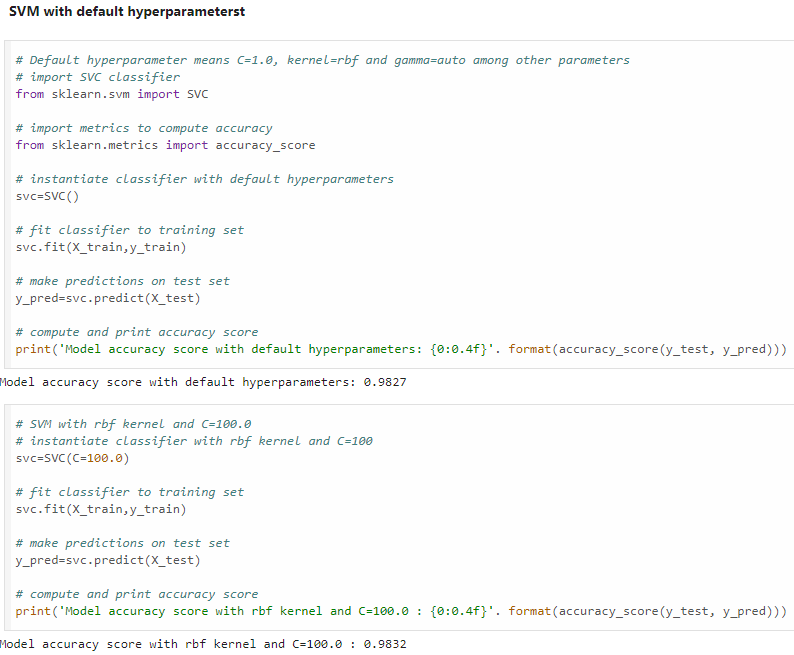
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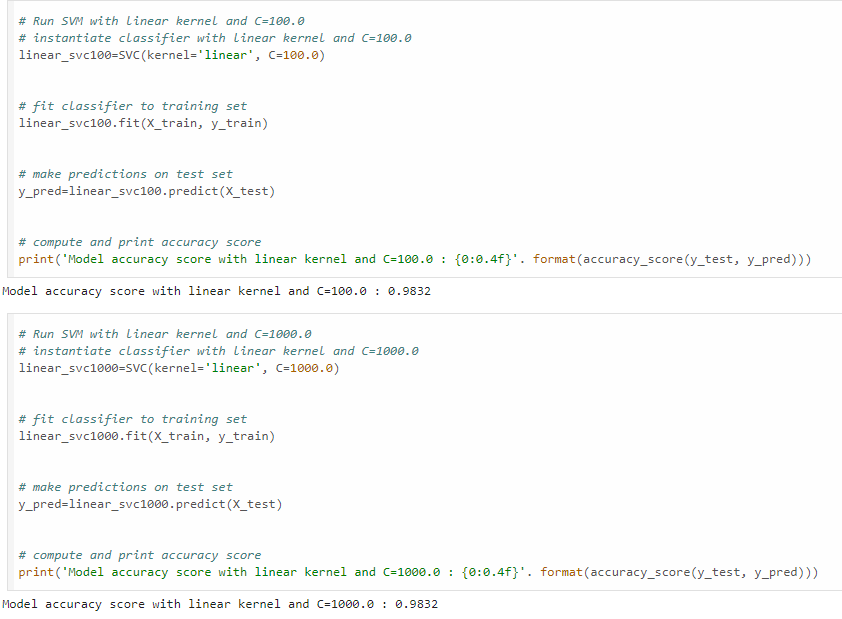
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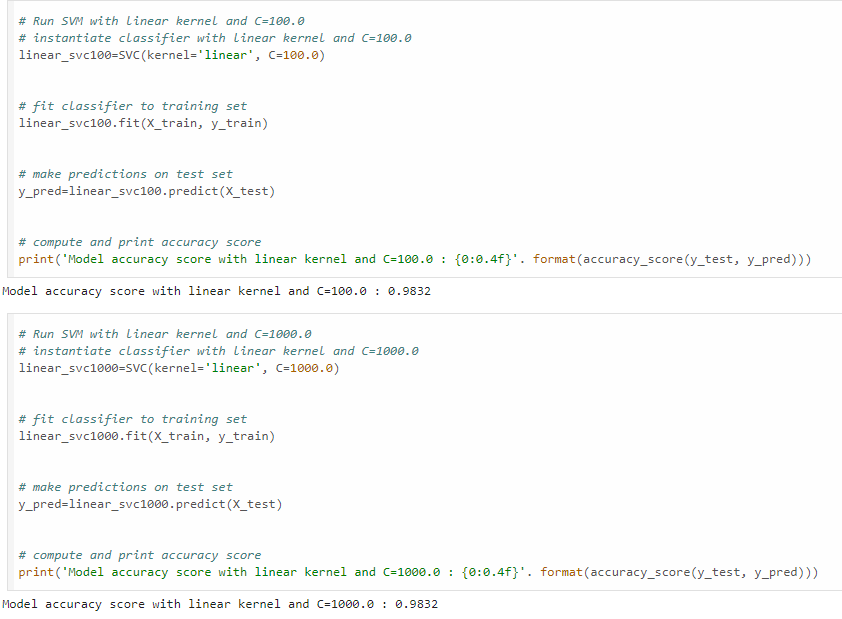
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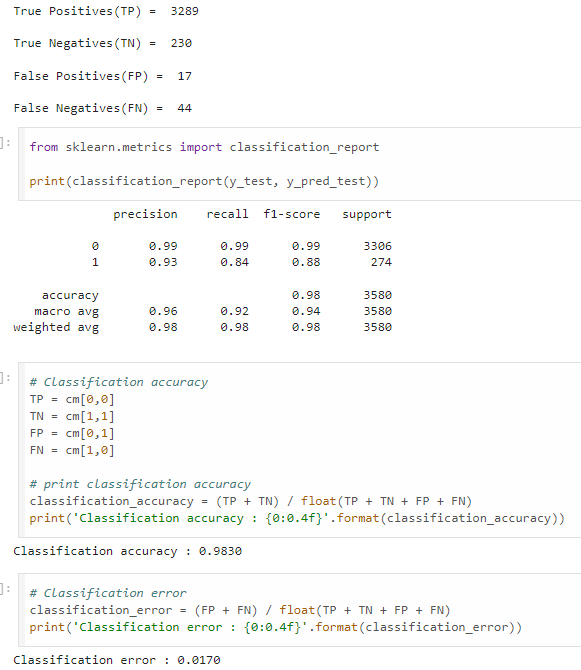
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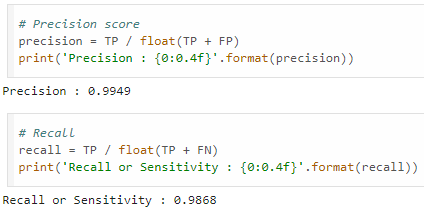
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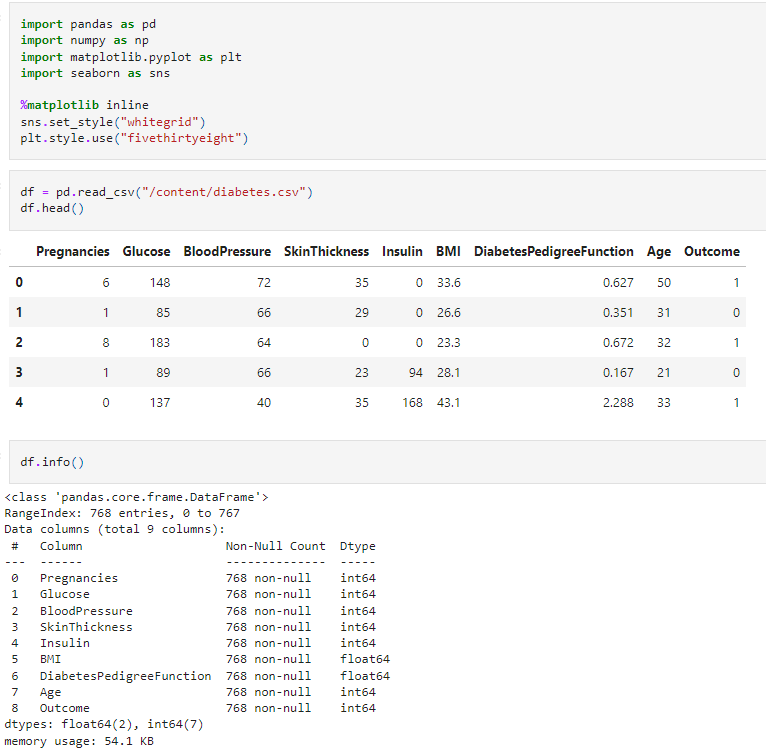
* 1. **Experiment - 8**
     1. **Question:**

**a)** Implement Random forest ensemble method on a given dataset.

**b)** Implement Boosting ensemble method on a given dataset.

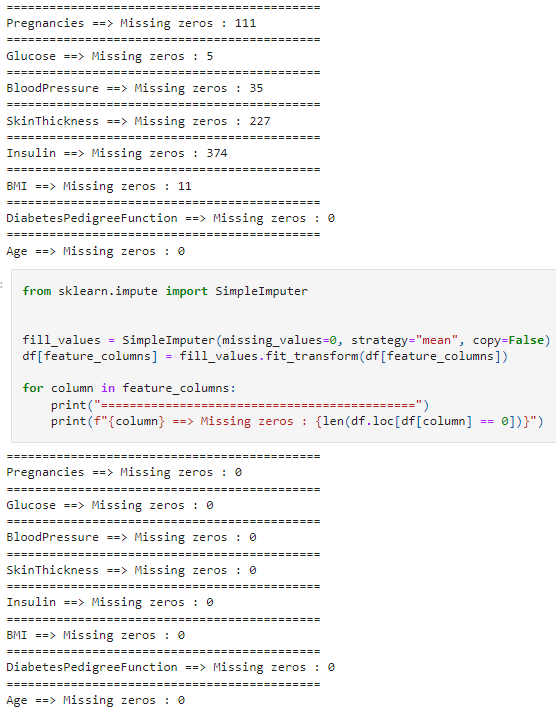
* + 1. **Code with Output:**

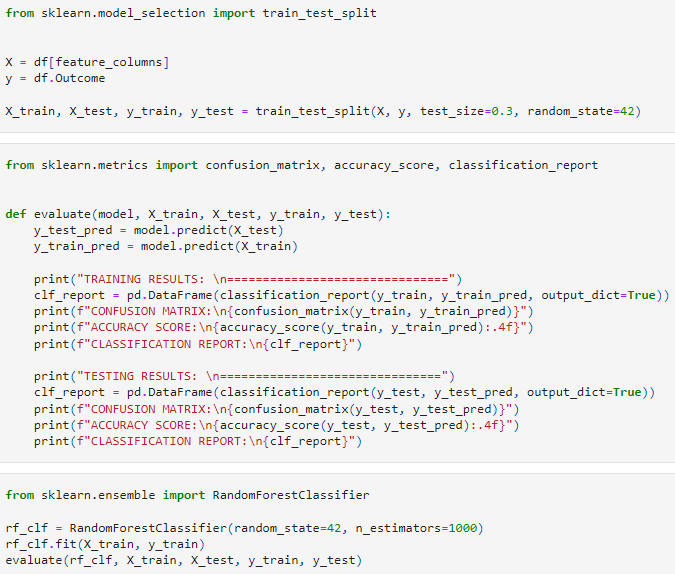
1. **Random Forest:**

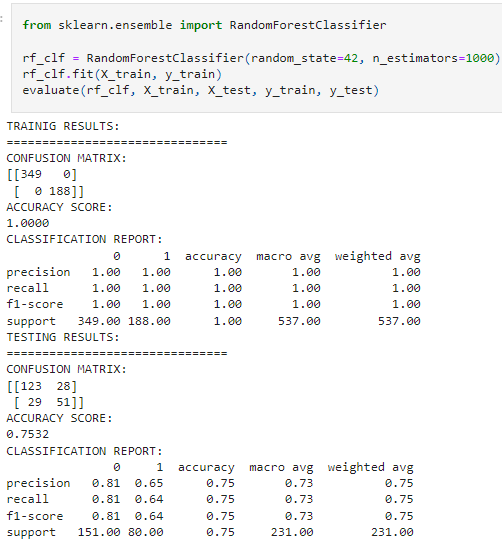
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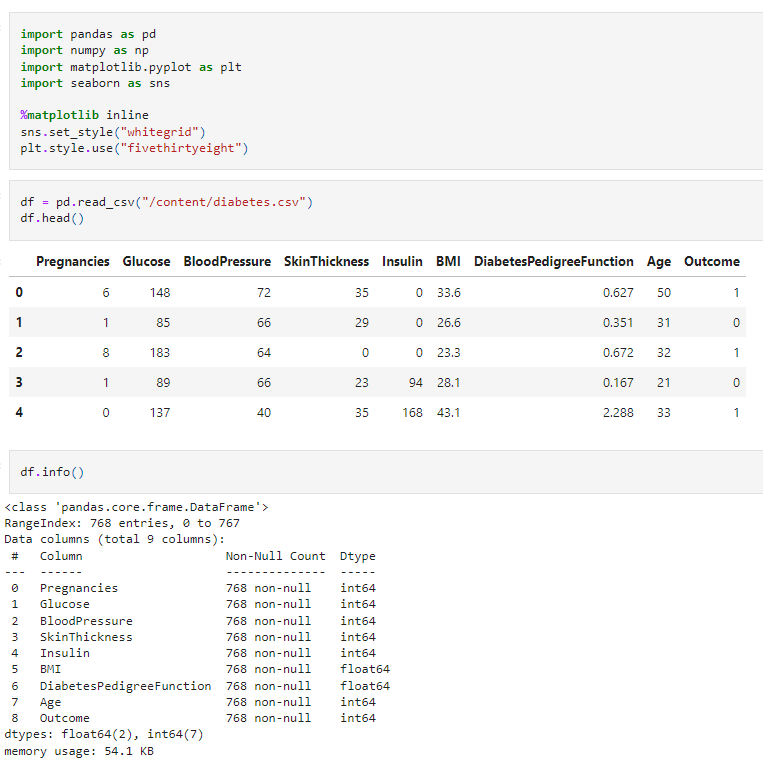
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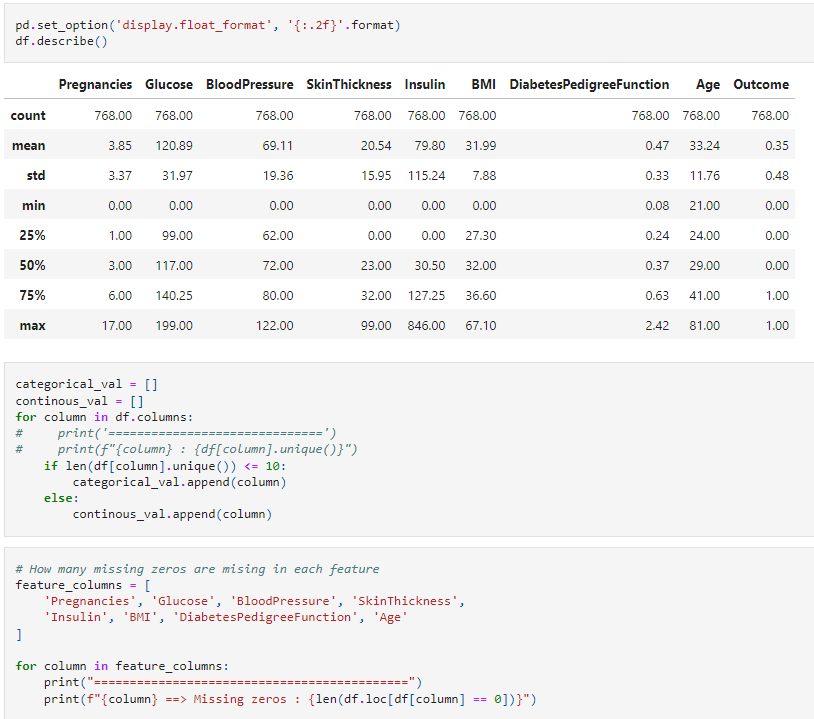
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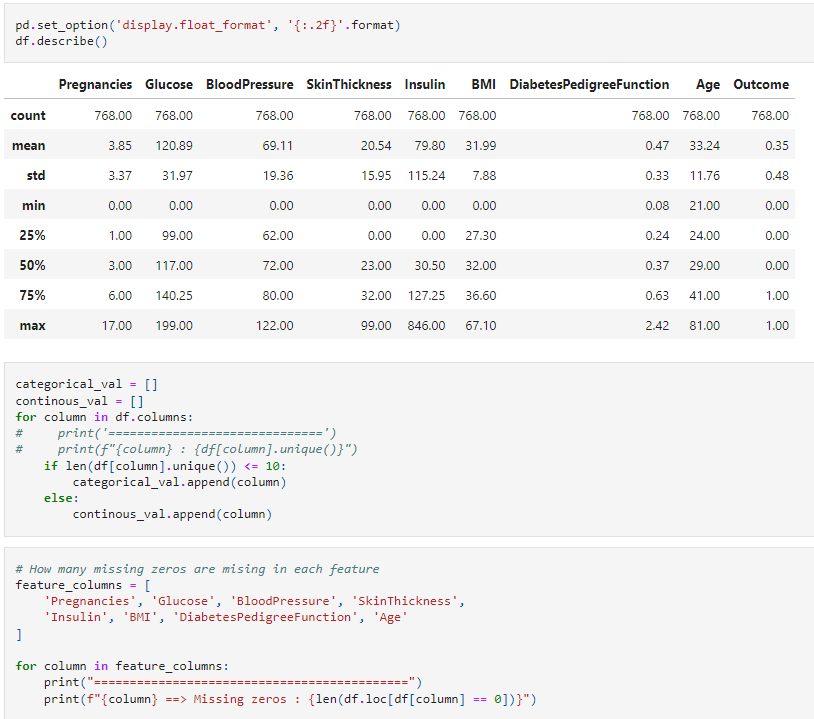
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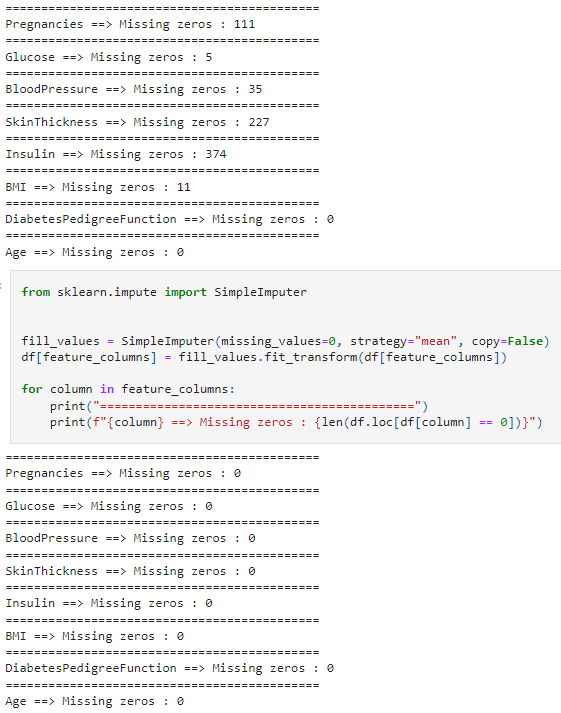
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1. **Boosting Ensemble:**

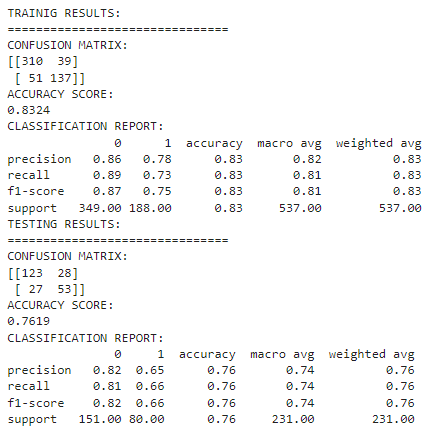
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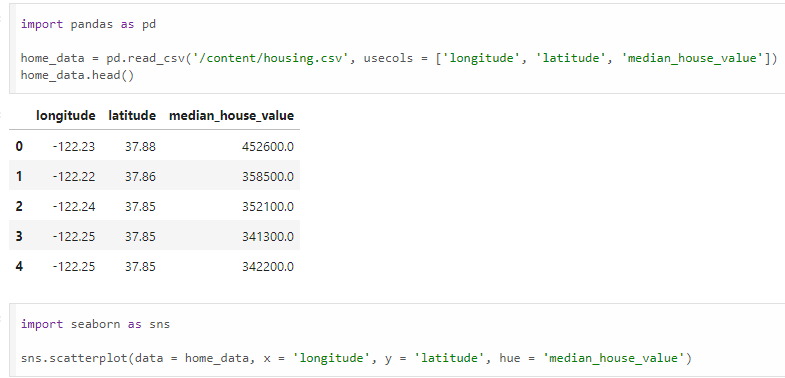
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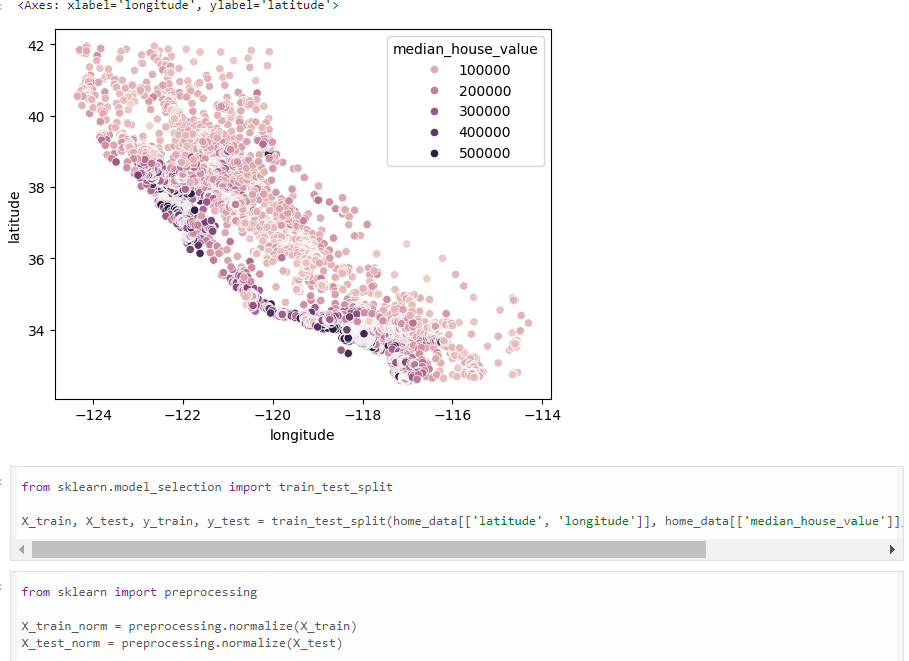
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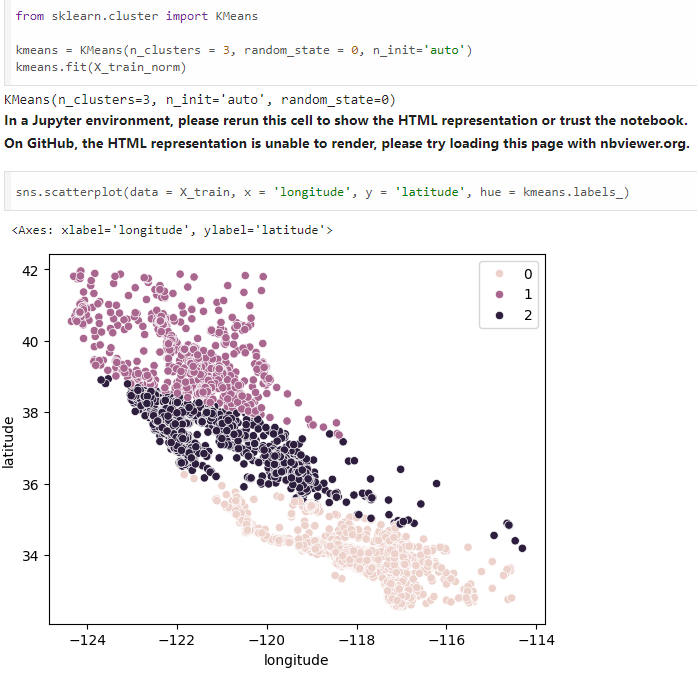
* 1. **Experiment - 9**
     1. **Question:**

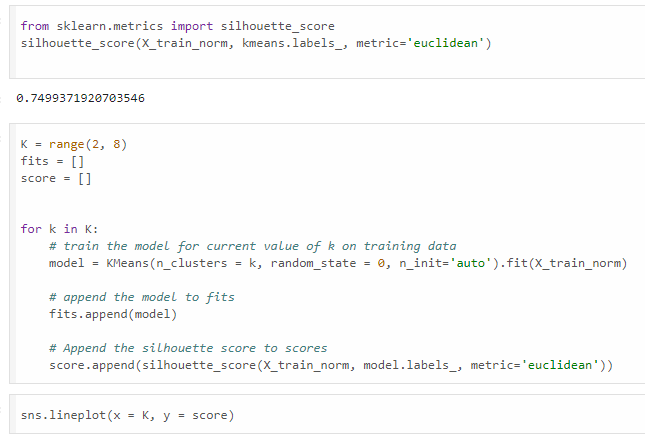
Build k-Means algorithm to cluster a set of data stored in a .CSV file.

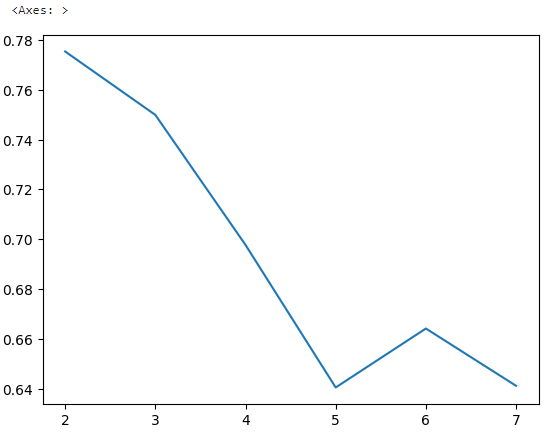
* + 1. **Code with Output:**

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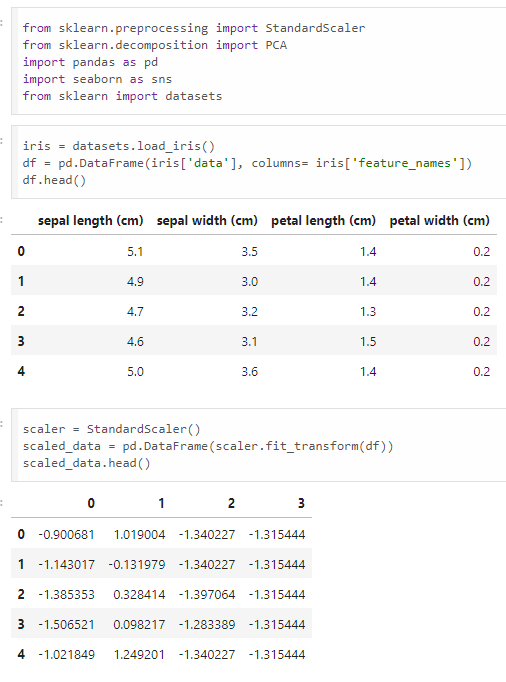
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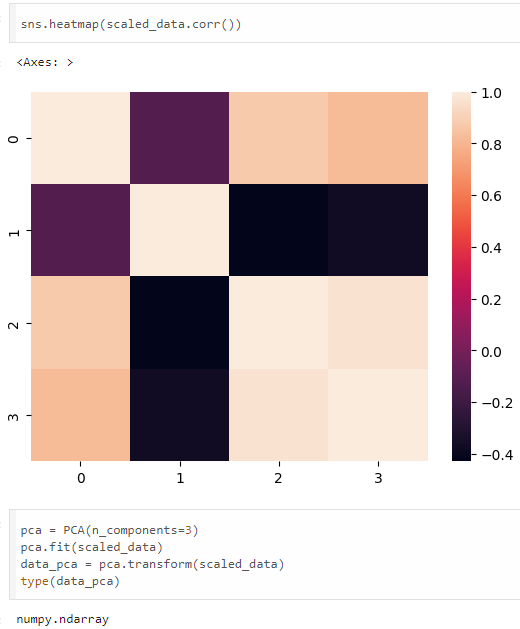
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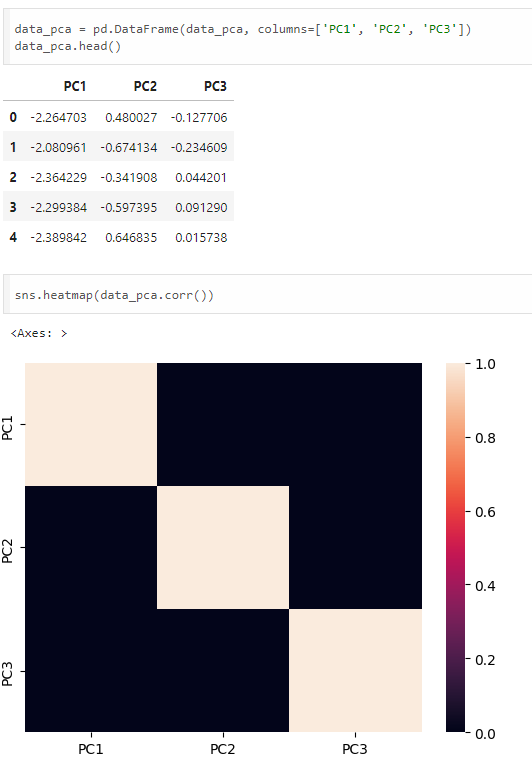
* 1. **Experiment - 10**
     1. **Question:**

Implement Dimensionality reduction using Principle Component Analysis (PCA) method.

* + 1. **Code with Output:**

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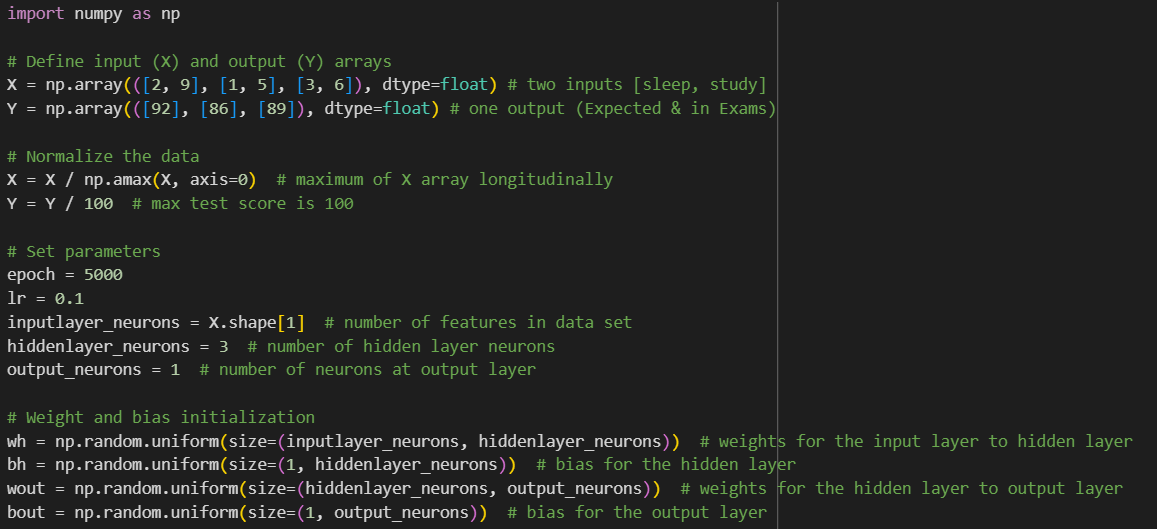
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* 1. **Experiment - 11**
     1. **Question:**

Build Artificial Neural Network model with back propagation on a given dataset.

* + 1. **Code with Output:**

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