**29.How to implement multiple linear regression using statsmodels library in python?**

**Objective:**

* To build multiple linear regression model using python.

**Process:**

* Import necessary libraries.
* Import OLS model from statsmodel.
* Plot scatter diagram to check linearity.
* Assign independent variables(X).
* Assign dependent variable(Y).
* Build the regression model.
* Fit X and Y

**Input:**

* Data set(CSV File).

**Output:**

* Summary of OLS model, which includes co-efficients, p-value, standard error, descriptive statistics,..etc....

**Source code:**

#import libraries

import statsmodels.api as sm

import pandas as pd

import matplotlib.pyplot as plt

#read the data set

data=pd.read\_csv('/home/soft27/soft27/Sathish/

Pythonfiles/Employee.csv')

#creating data frame

df=pd.DataFrame(data)

print(df)

#plotting the scatter diagram for independent variable 1

plt.scatter(df['rating'], df['salary'], color='red')

plt.title('rating vs salary', fontsize=14)

plt.xlabel('rating', fontsize=14)

plt.ylabel('salary', fontsize=14)

plt.grid(True)

plt.show()

#plotting the scatter diagram for independent variable 2

plt.scatter(df['bonus'], df['salary'], color='green')

plt.title('bonus vs salary', fontsize=14)

plt.xlabel('bonus', fontsize=14)

plt.ylabel('salary', fontsize=14)

plt.grid(True)

plt.show()

#assigning the independent variable

X = df[['rating','bonus']]

#assigning the dependent variable

Y = df['salary']

#Build multiple linear regression

X = sm.add\_constant(X)

#fit the variables in to the linear model

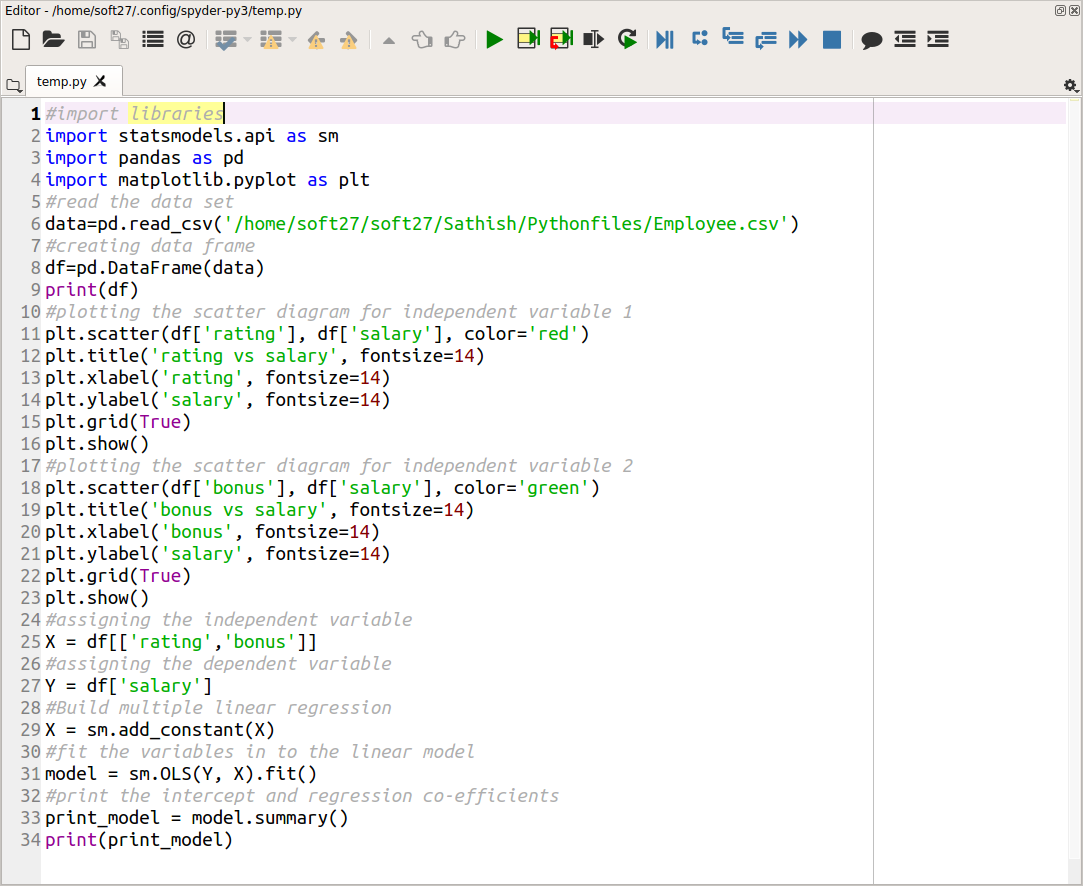
model = sm.OLS(Y, X).fit()

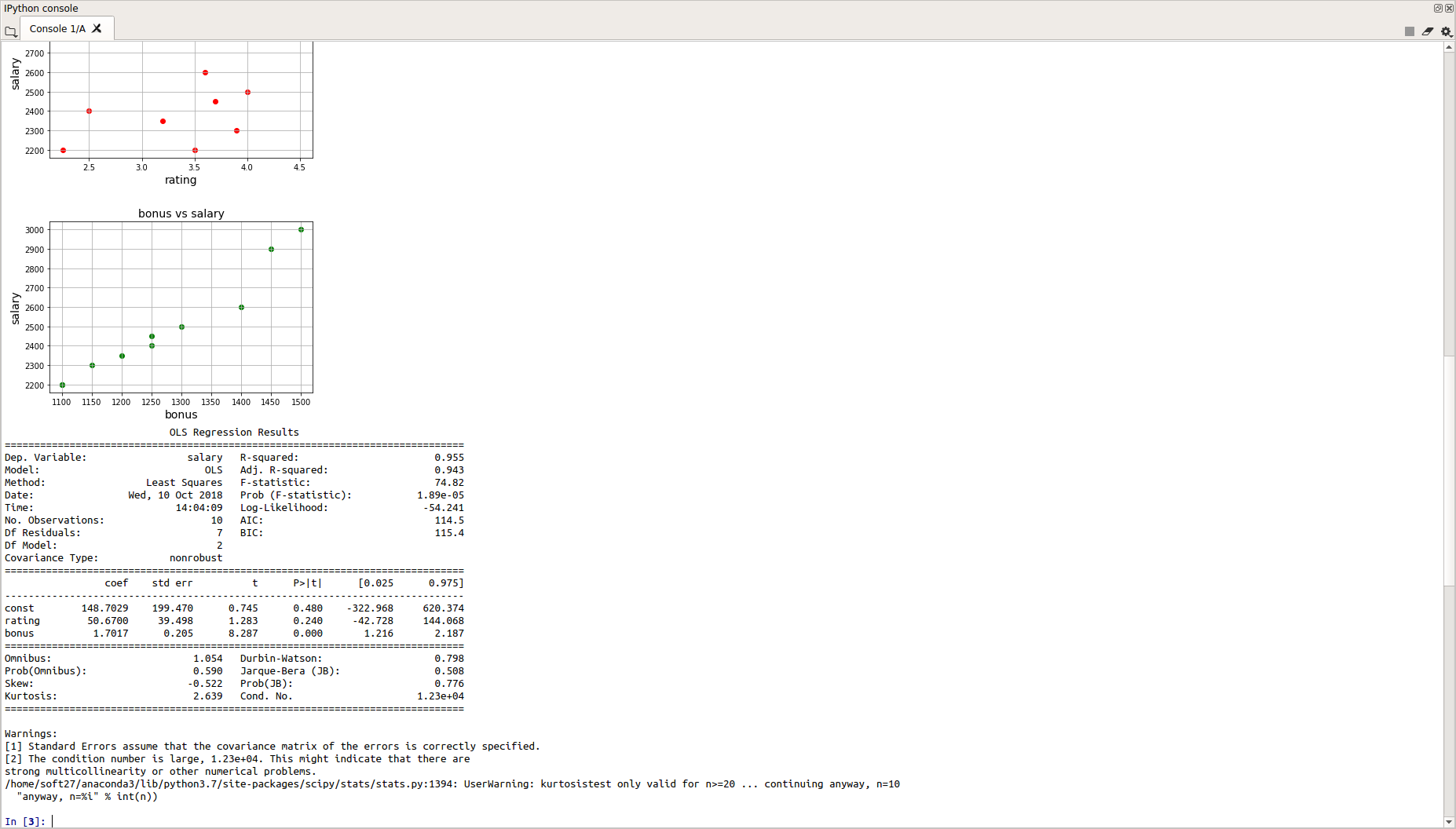
#print the intercept and regression co-efficients

print\_model = model.summary()

print(print\_model)

**Screen shots:**

****

****