**Homework 8 Programming Task (10 points)**

IST 5520 - Fall 2022, Chen

**Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Data**

The data file “UniversalBank.csv” contains a dataset of 5000 customers of the Universal Bank.

Below is the description of columns in the dataset.  
• Id: Customer ID  
• Age: Customer’s age in completed years  
• Experience: #years of professional experience  
• Income: Annual income of the customer ($000)  
• ZIPCode: Home Address ZIP code.  
• Family: Family size of the customer  
• CCAvg: Avg. spending on credit cards per month ($000)  
• Education: Education Level. 1: Undergrad; 2: Graduate; 3: Advanced/Professional  
• Mortgage: Value of house mortgage if any. ($000)  
• Personal\_Loan: Did this customer accept the personal loan offered in the last campaign?  
• Securities\_Account: Does the customer have a securities account with the bank?  
• CD\_Account: Does the customer have a certificate of deposit (CD) account with the bank?  
• Online: Does the customer use internet banking facilities?  
• CreditCard: Does the customer use a credit card issued by UniversalBank?

**Note:** Since Education should be categorical variable, you need to convert it into dummies.

Complete the following task and questions.

**Programming Task: (6 points)**

Conduct a multiple linear regression analysis. Regress Personal\_Loan on other variables except Id and ZIP\_Code.

**Question 1: (2 points)**

According to the OLS, interpret the effect of Education on Personal\_Loan? Does the effect statistically significant? Since the Personal\_Loan is a dummy variable, you can interpret the coefficient as the change of probability. Explain the effect using business language (people with common business background can understand).

Your Answer:

**Question 2: (2 points)**

According to the OLS, interpret the effect of Age on Personal\_Loan? Does the effect statistically significant? Explain the effect using business language (people with common business background can understand).

Your Answer:

**Submission:**

Submit: (1) your jupyter notebook with results, and (2) this task document with answers.