Score for this quiz: **19** out of 20
Submitted Oct 16 at 8:59pm
This attempt took 11,109 minutes.

Load dataset **"College"** from Package "ISLR" in R.

Question 1

1 / 1 pts

Estimate a linear regression model (using the lm function) with Personal as the dependent variable and Room.Board as the independent variable. What are the model's R-squared and adjusted R-squared values?

- 0.00549, 0.048
- 0.0143, 0.022
- **0.0398, 0.0385**
- 0.0325, 0.0336

Question 2

1 / 1 pts

Based on the linear-linear regression model in the previous question (with Personal as the dependent variable and Room.Board as the independent variable), fit three nonlinear models using those two variables. Based on their adjusted R-squared values, which one of the four models is most appropriate to use?

- Log-Linear
- **Log-Log**
- Linear-Linear
- Linear-Log

Question 3

1 / 1 pts

Interpret the coefficient of the independent variable for the Linear-Log model.

- 1% increase in Room.Board leads to 536.36 units decrease in Personal
- 1 unit increase in Room.Board leads to 536.36 units decrease in Personal
- 1 unit increase in Room.Board leads to 0.01*536.36 units decrease in Personal
- **1% increase in Room.Board leads to 0.01*536.36 units decrease in Personal**

Question 4

1 / 1 pts

Interpret the coefficient of the independent variable for the Log-Linear model.

- 1% increase in Room.Board leads to e^(9.187e^-05) units decrease in Personal
- **1 unit increase in Room.Board leads to (e^(9.187e^-05)-1) * 100% decrease in Personal**
- 1 unit increase in Room.Board leads to e^(9.187e^-07) units decrease in personal
- 1% increase in Room.Board leads to e^(9.187e^-05) * 100% decrease in Personal

Question 5

1 / 1 pts

Interpret the coefficient of the independent variable for the Log-Log model.

- **1% increase in Room.Board leads to 0.40568% decrease in Personal**
- 1 unit increase in Room.Board leads to 0.40568*100% decrease in Personal
- 1 unit increase in Room.Board leads to (e^0.40568)*100% decrease in Personal
- 1% increase in Room.Board leads to 0.40568% increase in Personal

Imagine you are interested in knowing how variables like GRE (Graduate Record Exam scores), GPA (Grade Point Average) etc affect admission into graduate school. The response variable, **"admit"** (admit/don't admit), is a binary variable. Create a logistic regression model using the dataset **binary.csv**. Use the information from the model to answer the following five questions. Select the closest answer.

Question 6

1 / 1 pts

How to interpret the coefficient of gre?

- If gre increases by 1 unit, the natural log of the odds of admission increases by 0.003.
- If gre increases by 1 unit, the odds of admission increase by a factor of exp(0.003).
- If gre increases by 1 unit, the odds of admission increase by roughly 100*0.003 percent.
- [x] All of the above.

Question 7

1 / 1 pts

How to interpret the coefficient of gpa?

- [x] If gpa increases by 1 unit, the natural log of the odds of admission increases by 0.755.
- If gpa increases by 1 unit, the odds of admission increase by 0.755.
- If gpa increases by 1 unit, the odds of admission increase by exp(0.755).
- All of the above.

Question 8

1 / 1 pts

A student has the GPA of 3.5 and GRE score of 330. What is the predicted probability of this student getting admitted into graduate school?

- A. exp(-4.949 + 0.003*3.5 + 0.755*330)/[1 + exp(-4.949 + 0.003*3.5 + 0.755*330)]
- [x] B. exp(-4.949 + 0.003*330 + 0.755*3.5)/[1 + exp(-4.949 + 0.003*330 + 0.755*3.5)]
- C. [1 - exp(-4.949 + 0.003*330 + 0.755*3.5)]/[1 + exp(-4.949 + 0.003*330 + 0.755*3.5)]
- D. [1 - exp(-4.949 + 0.003*330 + 0.755*3.5)]/exp(-4.949 + 0.003*330 + 0.755*3.5)

Question 9

1 / 1 pts

If a student has a GRE score of 330, with 0.1 unit increase in GPA, what is the change of the natural log of predicted odds of this student getting admitted into graduate school?

- exp(-4.949 + 0.003*0.1 + 0.755*330)/[1 + exp(-4.949 + 0.003*0.1 + 0.755*330)]
- exp(-4.949 + 0.003*0.1 + 0.755*330)
- [x] 0.0755
- None of the above

Question 10

1 / 1 pts

What is the value of area under the curve (AUC) for the model created? Please select the closest answer.

- 0.804
- 0.935
- [x] 0.635
- 0.832

Use the dataset **Berkshire.csv** with the following variables.

- Column (1): *Date*, Calendar Date
- Column (2): *BRKret*, Berkshire Hathaway's monthly return
- Column (3): *MKT*, the return on the aggregate stock market
- Column (4): *RF*, the risk free rate of return

Question 11

1 / 1 pts

What is the standard deviation of Berkshire Hathaway over the sample period?

- (•) 6.75%
- ( ) 6.81%
- ( ) 6.86%
- ( ) 6.90%

Question 12

1 / 1 pts

What is Berkshire Hathaway's average return over the sample period? (Select the closest)

- ( ) 1.5%
- (•) 1.9%
- ( ) 2.3%
- ( ) 2.7%

Question 13

1 / 1 pts

Relative to the aggregate market, Berkshire Hathaway has:

- ( ) Underperformed the market
- ( ) Outperformed the market by 0.25% to 0.50% per month on average
- (•) Outperformed the market by greater than 0.75% per month on average

Question 14

1 / 1 pts

$10,000 invested in Berkshire Hathaway at the start of the sample period would have grown to _____ by the end of the sample period

- ( ) $900,000
- ( ) $10,000,000
- ( ) $25,000,000
- (•) Over $30,000,000

Question 15

1 / 1 pts

What is Berkshire Hathaway's monthly Sharpe ratio?

- ( ) 0.10
- ( ) 0.55
- ( ) 0.80
- (•) 0.23

Question 16

1 / 1 pts

Berkshire Hathaway's Sharpe Ratio is _____ than the aggregate stock market?

- (•) Higher
- ( ) Lower

Question 17

1 / 1 pts

What is Berkshire Hathaway's estimated beta?

- ( ) 0.50
- ( ) 1.25

0.70

Greater than 1.25

Question 18

1 / 1 pts

On a monthly basis, what is Jensen’s alpha for Berkshire Hathaway?

0.52%

1.08%

0.25%

-0.50%

In this question, we will determine the factors explaining the returns for the HiTec industry portfolio (as defined by Fama and French **here**)

We will build a factor regression model using the data in the **Factor_HiTech.csv** file to answer the questions below.

In the file,

- Mkt_rf: Monthly excess return on the aggregate stock market
- RF: Risk Free rate
- SMB: Size Factor
- HML: Value Factor
- QMJ: Quality Factor
- BAB: Betting against beta factor
- Mom: Momentum factor

HiTec: Monthly return on the HiTec industry portfolio

Question 19

1 / 1 pts

What is the coefficient of the Value factor in the factor regression (choose the closest answer)?

What does the result for the value factor say about the investment style of the portfolio (choose the most likely answer)?

1.11, the portfolio invests in growth stocks

-0.09, the portfolio invests in value stocks

-0.54, the portfolio invests in growth stocks

-0.04, we cannot say as coefficient is not statistically significant

Incorrect

Question 20

0 / 1 pts

What is the correlation between the Value factor and the Momentum factor over the entire period of the data set? What does the value of correlation suggest about the diversification benefits to investors in this portfolio?

A. -0.211, negative correlation does not suggest a diversification benefit

B. -0.211, negative correlation suggests a diversification benefit

C. 0.211, positive correlation does not suggest a diversification benefit

D. -0.411, negative correlation does not suggest a diversification benefit

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