

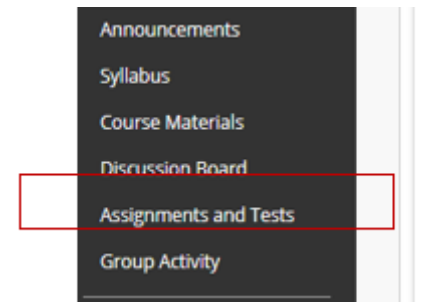
Group Assignment

Korea University Business School

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Instructions

- Due Date: Thursday, 21 April by 11:59pm
- Deliverables and File Naming Rules
 - R code file: **BUSS215_A2_GXX.r**
 - Data file: **BUSS215_A2_GXX.csv**
 - **XX indicates your group number**
 - **If violated, 5 points will be deducted from the total score**
- DO NOT use Excel, SAS, or any statistical software packages
- Work within your group. DO NOT share the answers with other groups
- Submit the file to the Blackboard Site
- If you need any assistance, please contact the TA, Mingi Song(smngnc3@korea.ac.kr)



Step 0: Import the admission data (admission.csv) from your project folder

```
> adm <- read.csv('admission.csv')
```

Step 1: Create three columns indicating the ranks (Low, Mid, High) of GRE, GPA, and Prestige of undergrad institutions (rank) as follows (30 pts.)

gre	GRE_Rank
gre <= 300	NQ
300 < gre <= 550	Low
550 < gre <= 700	Mid
700 < gre <= 800	High

gpa	GPA_Rank
gpa <= 2.0	NQ
2.0 < gpa <= 3.0	Low
3.0 < gpa <= 3.5	Mid
3.5 < gpa <= 4.0	High

rank	SCH_Rank
4	NQ
3	Low
2	Mid
1	High

Note: NQ means “Not Qualified”

<Output>

```
> head(adm)
  admit gre  gpa rank GRE_Rank GPA_Rank SCH_Rank
1     0 380 3.61   3     Low    High     Low
2     1 660 3.67   3     Mid    High     Low
3     1 800 4.00   1     High    High     High
4     1 640 3.19   4     Mid    Mid     NQ
5     0 520 2.93   4     Low    Low     NQ
6     1 760 3.00   2     High    Low     Mid
```

Step 2: Answer the following questions (**15 pts.**):

Q1: Count the number of applicants whose GPA scores are in the 'Mid' rank.

Q2: How many applicants are graduated from the 'Low' ranked undergrad institutions?

Q3: What is the average GRE score for the applicants whose undergraduate institutions' ranks are NOT in the 'NQ' rank?

Step 3: Create an additional column indicating the overall admission scores computed based on *GRE_Rank*, *GPA_Rank*, and *SCH_Rank* (30 pts.):

$$\text{Overall_Score} = 0.5 * \text{GRE_Rank} + 0.3 * \text{GPA_Rank} + 0.2 * \text{SCH_Rank}$$

, where NQ=10, Low = 40, Mid = 70, and High = 100

e.g., $\text{Overall_Score} = 0.5 * \text{GRE_Rank}(\text{Mid}) + 0.3 * \text{GPA_Rank}(\text{NQ}) + 0.2 * \text{SCH_Rank}(\text{Low})$
 $= 0.5 * \underline{70} + 0.3 * \underline{10} + 0.2 * \underline{40} = 26$

<Output>

```
> head(adm)
  admit gre  gpa rank GRE_Rank GPA_Rank SCH_Rank Overall_Score
1     0 380 3.61   3     Low     High     Low           58
2     1 660 3.67   3     Mid     High     Low           73
3     1 800 4.00   1     High     High     High          100
4     1 640 3.19   4     Mid     Mid     NQ           58
5     0 520 2.93   4     Low     Low     NQ           34
6     1 760 3.00   2     High     Low     Mid           76
```

Step 4: Answer the following questions (20 pts.):

Q4: Calculate $\text{Prob}(\text{admit}=0)$

Q5: Calculate $\text{Prob}(\text{admit}=1)$

Q6: Calculate $\text{Prob}(\text{admit}=0 \mid \text{GRE_Rank} = \text{NQ})$

Q7: Calculate $\text{Prob}(\text{admit}=1 \mid \text{GPA_Rank} \neq \text{High})$

Q8: Calculate $\text{Prob}(\text{admit}=0 \mid \text{SCH_Rank} = \text{Low})$

Q9: Calculate $\text{Prob}(\text{admit}=1 \mid \text{Overall_Score} > 75)$

Q10: Calculate $\text{Prob}(\text{admit}=0 \mid \text{Overall_Score} < 30)$

*Note: You should compute the conditional probabilities for Q6 – Q10

“|” means “given”, not “or”

Step 5: Export the data as a csv file (i.e., BUSS215_A2_GXX.csv) (5 pts.)