BUSS215: Management Information Systems

Individual HW Assignment

Korea University Business School

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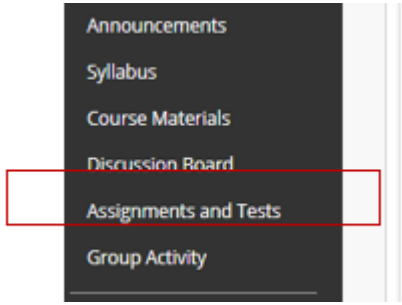
Instructions

- Due Date: Tuesday, 19 April by 11:59pm
- Complete the FOUR Homework Tasks (#1 - #4) in the following slides
- Deliverables and File Naming Rules
  - R code file: BUSS215_A1_ID.r
    - ID indicates your KU ID number
    - If violated, 2 points will be deducted from the total score



- DO NOT share the answers with others
- Make comments (#) on your code if needed
- Submit the files to the Blackboard Site
- If you need any assistance, please contact the TA, Mingi Song(smgnc3@korea.ac.kr)

Task#1: Variable and Vector (10 pts.)

- Create the following vectors (or variables):

A = $[1^2 4^{10}, 2^4 4^8, 3^6 4^6, 4^8 4^4, 5^{10} 4^2]$

B = $\sum_{i=2}^{10}(i^2 + 2^i) + \sum_{k=1}^{20}\sum_{m=2}^{15}\frac{k^2}{(2+m)}$

Note: Use the 'seq()' function to generate the numbers in A and B

- Write down R code lines for A and B

Task#2: Data Frame (10 pts.)

- Step 1: Create the following data frame named "Input"

C	D
1	0
1	1
0	0
0	1

- Step 2: Create additional THREE "Output" columns
  - Column: OR
    - Return 1 if either C OR D is 1
    - Return 0 otherwise
  - Column: AND
    - Return 1 if both C AND D are 1
    - Return 0 otherwise
  - Column: XOR
    - Return 1 when either "C = 1 AND D = 0" or "C = 0 AND D = 1"
    - Return 0 otherwise
- Step 3: Present the following data frame named "Result" containing both "Input" and "Output" columns

C	D	OR	AND	XOR
1	0	1	0	1
1	1	1	1	0
0	0	0	0	0
0	1	1	0	1

Task#3: Data Frame and Functions (15 pts.)

Use the “admission.csv” file

- Write a function ‘Summary’ which takes two arguments: X and Y, where X is the name of data and Y is the column number of X.
  - The function should return the number of observations (*Num*), *Mean*, *Standard Deviation (SD)*, *Minimum (Min)*, and *Maximum (Max) values* of the Y-th column in the data.
  - The statistics should be presented in a data frame format as follows:

```
> Summary(admission, 1)
  Num    Mean          SD Min Max
1 400 0.3175 0.4660867   0   1
> Summary(admission, 1)
  Num    Mean          SD Min Max
1 400 0.3175 0.4660867   0   1
> Summary(admission, 2)
  Num   Mean         SD Min Max
1 400 587.7 115.5165 220 800
> Summary(admission, 3)
  Num    Mean          SD  Min Max
1 400 3.3899 0.3805668 2.26   4
> Summary(admission, 4)
  Num   Mean          SD Min Max
1 400 2.485 0.9444602   1   4
```

Task#4: Functions and If-Else (15 pts.)

- Write a function 'FN' which takes two arguments: A and B
  , where A and B are the non-zero numbers. The function should return

(1) A + B if A and B are both positive and odd numbers,
(2) A - B if either A or B is a negative and odd number,
(3) A * B if A and B are both negative and even numbers,
(4) A / B if either A or B is a positive and even number, and
(5) A^B in any different combinations.

Note: The conditions are listed in order of priority. The two input numbers should be seq uentially evaluated from (1) to (5).

- Write R code lines
  - Example Outputs are available in the next slide.

Task#4: Functions and If-Else (15 pts.)

Output (Example)

A	B	Operator	Values	Output
PE	PE	/	(2,2)	1
PE	PO	/	(2,1)	2
PO	PE	/	(1,2)	0.5
PO	PO	+	(1,1)	2
NE	NE	*	(-2,-2)	4
NE	NO	-	(-2,-1)	-1
NO	NE	-	(-1,-2)	1
NO	NO	-	(-1,-1)	0

- ✓ PE: Positive Even Number
- ✓ PO: Positive Odd Number
- ✓ NE: Negative Even Number
- ✓ NO: Negative Odd Number