DATA SCIENCE FOR ENGINEERS

WEEK 1

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Week Highlights

Topic	Details
Introduction to R language	Interface introduction
Variables and Datatypes in R	Variable naming/ Types of Data types/ Task in Datatypes/ Object in R (vector, list, dataframe)
Dataframes object in R	Introduction to Dataframes/ How to Create/ Edit element /Add row / Delete row / Joining two dataframes
Different operations in R	Arithmetic / Logical / Matrix operations
Functions in R	Introduction to function/ loading function/ calling function/ mimo function/ Looping over object
Control Structures	If-else-if statement/ for loop/ while loop/ break in loop
Data Visualization	Scatter plot/ Line plot/ Bar plot

Questions: Previous Assignment

1. The function " ls( )" in R will

- set a new working directory path
- list all objects in our working environment
- display the path to our working directory
- list all files in our working directory

Ans:

2. Consider the following code

```
room.temperature <- as.integer(readline(prompt="Enter room temperature in degree celsius: "))

if (room.temperature < 19) {
  print("The room is chilly. Please turn the heater on!")
} else {
  if (room.temperature >= 19 && room.temperature <=25) {
    print("The room is warm")
    print("Enjoy the stay!")
  } else {
    print("The room is hot")
    print("Please turn the air conditioning on!")
  }
}
```

If a room temperature of 20 degree Celsius is input to the above code, choose the output displayed:

- "The room is chilly. Please turn the heater on!"
- "The room is warm" "Enjoy the stay!"
- "The room is hot" "Please turn the air conditioning on!"
- None of the above

3. Consider the code below to create a dataframe city_data:

```
name<-c('City A', 'City B', 'City C')
weather<-c('Sunny','Cloudy','Rainy')
city_data<-data.frame(name,weather)
```

Choose the correct answer based on the output expected on running the below code.

```
city_data$weather[city_data$name == 'City C']<-'Snowy'
print(city_data)
```

- In the column weather in dataframe city_data, "Rain" is replaced by "Snowy"
- In the column name in dataframe city_data, "City C" is replaced by "Snowy"
- No change occurs to the entries in the dataframe city_data
- The code raises an error

Ans:

4. Consider the code given below.

```
city_weather = list("City A", "City B", "City C", c("Sunny","Cloudy","Rainy"))
```

Choose the correct command to access the variable “Cloudy”

- city_weather[[4]][2]
- city_weather[[5]]
- city_weather[[2]][2]
- None of the above

Ans:

5. Consider the following code.

```
A = matrix(c(1:42), nrow = 6, ncol = 7, byrow = T)
B = A[-2,]
```

Based on the output of the above code, choose the correct options from the following

- B is a matrix consisting of only elements of the second row of matrix A
- B is a matrix consisting of same elements as that of A
- The code raises an error
- B is a matrix consisting of all elements of A excluding the second row

Ans:

6. The parameter “collapse” in the function paste()

- adjusts the display of the string to left, right or center
- add space in between two strings
- eliminates the space in between two strings
- eliminates the space within two words in a string

Ans:

7. Consider the following code in R.

```
find.function <- function(a) {
  for(i in 1:a) {
    b <- i^2
    print(b)
  }
}
```

If we supply 4 as an argument to the function find.function, after executing the above code, the result displayed would be:

- the numbers "1,2,3,4"
- the numbers "1,4,9,16"
- the number "4"
- None of the above

Ans:

8. The operator %in% is used for

- multiplication of a matrix with its transpose
- generating a sequence of numbers in a vector
- identifying if an element belongs to a vector
- none of the above

Ans:

9. The output of compiling and executing the following code in R would be

```
v_name <- c("Green","apple")
cnt <- 2
repeat{
  print(v_name)
  cnt <- cnt+1
  if(cnt > 5){
    break
  }
}
```

- The term “Green” “apple” printed 5 times.
- The term “Green apple” printed 3 times.
- The term “Green” printed 4 times
- The term “Green” “apple” printed 4 times.

Ans:

10. The “next” statement in R programming is useful

- for skipping the current iteration of a loop without terminating it.
- for terminating the current iteration of a loop.
- for evaluating the current iteration of a loop without terminating it.
- None of the above

Ans: