# QUIZ

**(Prelim)**

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**COURSE/SECTION:**

**Instructions:**

Insert all the screenshots in each of the tasks. Update your "Prelim" repo with a commit details of "SW Quiz - <FULLNAME> <DATE>". Submit your GITHUB Account Name thru email (alvinsarragaalon@hotmail.com) with a subject format of "CPE 406 QUIZ Prelim - <FULLNAME> <DATE>"

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# Task 1

1.1 If I execute the expression z <- 12 in R, what is the class of the object 'z'?

```
> z<-12
> class(z)
[1] "numeric"
```

1.2 If I execute the expression z <- 1L in R, what is the class of the object 'z'?

```
> z<-1L
> class(z)
[1] "integer"
```

# Task 2

2.1 Create a vector z with an objects of 12 and TRUE. What is the implicit coerced class of the object defined by z?

```
> z<-c(12,TRUE)
> class(z)
[1] "numeric"
```

2.2 Create a vector y with an objects of “a” and 1+0i. What is the implicit coerced class of the object defined by y?

```
> z<-c("a",1+0i)
> class(z)
[1] "character"
```

2.3 Convert the vector output from task 2.1 as atomic class LOGICAL.

```
> z<-c(12,TRUE)
> as.logical(z)
[1] TRUE TRUE
```

2.4 Convert the vector output from task 2.2 as atomic class COMPLEX.

```
> z<-c("a",1+0i)
> as.complex(z)
[1]   NA 1+0i
Warning message:
NAs introduced by coercion
```

# Task 3

3.1 If I have two vectors named as m and n with objects as (110,113, 115, 133) and (113, 212, 818, 1110) respectively, what is produced by the expression rbind(m, n)?

```
> m <- c(110,113,115,133)
> n <- c(113,212,818,1110)
> rbind(m,n)
  [,1] [,2] [,3] [,4]
m  110  113  115  133
n  113  212  818 1110
```

3.2 What is the dimension attribute of the vectors m and n from task 3.1?

```
> dim(x)
[1] 2 4
```

# Task 4

4.1 Suppose I have a list defined as z <- list(22, "a", 1+4i, TRUE). What does z[[3]] give me?

```
> z <- list(22, "a", 1+4i, TRUE)
> z[[3]]
[1] 1+4i
```

4.2 From the vector z of task 4.1, create a self describing name for each objects according to their atomic class.

```
> z <- list( numeric =22,character = "a",complex = 1+4i,logical = TRUE)
> z
$`numeric`
[1] 22

$character
[1] "a"

$complex
[1] 1+4i

$logical
[1] TRUE
```

# Task 5

5.1 Suppose I have a vector z <- 10:40 and a vector y <- 3. What is produced by the vectorized add operations?

```
> z <- 10:40
> y <- 3
> z+y
 [1] 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43
```

5.2 From task 5.1, what is produced by the vectorized multiply operations?

```
> z*y
 [1]  30  33  36  39  42  45  48  51  54  57  60  63  66  69  72  75  78  81
[19]  84  87  90  93  96  99 102 105 108 111 114 117 120
```

# Task 6

6.1 Suppose I have a vector x <- c(117, 114, 14, 15, 113, 112, 110) and I want to set all elements of this vector that are less than 16 to be equal to 1. What R code achieves this?

```
> x <- c(117, 114, 14, 15, 113, 112, 110)
> x[x >16] <- 1
> x
[1]  1  1 14 15  1  1  1
```

6.2 From the output of task 6.1, deparsed the R object and named it as sona.R

```
> x <- c(117, 114, 14, 15, 113, 112, 110)
> x[x >16] <- 1
> x
[1]  1  1 14 15  1  1  1
> dput(x)
c(1, 1, 14, 15, 1, 1, 1)
> dput(x, file = "sona.R")
> new.x<- dget("sona.R")
> new.x
[1]  1  1 14 15  1  1  1
```

6.3 From the output of task 3.1, deparsed the R object and named it as suna.R

```
> m <- c(110,113,115,133)
> n <- c(113,212,818,1110)
> rbind(m,n)
  [,1] [,2] [,3] [,4]
m  110  113  115  133
n  113  212  818 1110
>  y <-rbind(m,n)
> dput(y)
structure(c(110, 113, 113, 212, 115, 818, 133, 1110), .Dim = c(2L,
4L), .Dimnames = list(c("m", "n"), NULL))
> dput(y, file = "suna.R")
> new.y <-dget("suna.R")
> new.y
  [,1] [,2] [,3] [,4]
m  110  113  115  133
n  113  212  818 1110
```

# Task 7

7.1 Read the quiz_data.

```
> data <-read.csv("quiz_data.csv")
> data
    Ozone Solar.R Wind Temp Month Day
1      41     190  7.4   67     5   1
2      36     118  8.0   72     5   2
3      12     149 12.6   74     5   3
4      18     313 11.5   62     5   4
5      NA      NA 14.3   56     5   5
6      28      NA 14.9   66     5   6
7      23     299  8.6   65     5   7
8      19      99 13.8   59     5   8
9       8      19 20.1   61     5   9
10     NA     194  8.6   69     5  10
11      7      NA  6.9   74     5  11
12     16     256  9.7   69     5  12
13     11     290  9.2   66     5  13
14     14     274 10.9   68     5  14
15     18      65 13.2   58     5  15
16     14     334 11.5   64     5  16
17     34     307 12.0   66     5  17
18      6      78 18.4   57     5  18
19     30     322 11.5   68     5  19
20     11      44  9.7   62     5  20
21      1       8  9.7   59     5  21
22     11     320 16.6   73     5  22
23      4      25  9.7   61     5  23
24     32      92 12.0   61     5  24
25     NA      66 16.6   57     5  25
26     NA     266 14.9   58     5  26
27     NA      NA  8.0   57     5  27
28     23      13 12.0   67     5  28
```

7.2 In the dataset provided for this Quiz, what are the column names of the dataset?

```
> names(data)
[1] "Ozone"   "Solar.R" "Wind"    "Temp"    "Month"   "Day"
```

# Task 8

Extract the last 18 rows of the data frame and print them to the console. What does the output look like?

```
> data[c(1:17,2)]
    Ozone Solar.R Wind Temp Month Day
1:     41     190  7.4   67     5   1
2:     36     118  8.0   72     5   2
3:     12     149 12.6   74     5   3
4:     18     313 11.5   62     5   4
5:     NA      NA 14.3   56     5   5
6:     28      NA 14.9   66     5   6
7:     23     299  8.6   65     5   7
8:     19      99 13.8   59     5   8
9:      8      19 20.1   61     5   9
10:    NA     194  8.6   69     5  10
11:     7      NA  6.9   74     5  11
12:    16     256  9.7   69     5  12
13:    11     290  9.2   66     5  13
14:    14     274 10.9   68     5  14
15:    18      65 13.2   58     5  15
16:    14     334 11.5   64     5  16
17:    34     307 12.0   66     5  17
18:    36     118  8.0   72     5   2
```

# Task 9

9.1 What is the value of Wind in the 82nd row?

```
> data[82,Wind]
[1] 6.9
```

9.2 Temp in the 32nd row?

```
> data[32,Temp]
[1] 78
```

9.3 Solar.R in the 42nd row?

```
> data[42,Solar.R]
[1] 259
```

# Task 10

10. How many total missing values are in the columns of this data frame?

**42**

10.2 For Ozone?

```
> qz1 = read.csv('quiz_data.csv')
> sub = subset(qz1,is.na(Ozone))
> nrow(sub)
[1] 37
```

10.3 For Solar.R?

```
> sub = subset(qz1,is.na(Solar.R))
> nrow(sub)
[1] 7
```

10.4 For Wind?

```
> sub = subset(qz1,is.na(Wind))
> nrow(sub)
[1] 0
```

10.5 For Temp?

```
> sub = subset(qz1,is.na(Temp))
> nrow(sub)
[1] 0
```

# Task 11

11.1 What is the mean for the 20$^{th}$ row – 70$^{th}$ row in Ozone column in this dataset? Exclude missing values (coded as NA) from this calculation.

```
> sub = subset(data,!is.na(Ozone)& Ozone > 20 & Ozone < 70, select = Ozone)
> apply(sub,2,mean)
   Ozone
37.83333
```

11.2 What is the mean for the 10th row – 50th row in Solar.R column in this dataset? Exclude missing values (coded as NA) from this calculation.

```
> sub = subset(data,!is.na(Solar.R)& Solar.R > 10 & Solar.R < 50, select = Solar.R)
> apply(sub,2,mean)
 Solar.R
30.53333
```

11.3 What is the mean for the 12th row – 20th row in Temp column in this dataset? Exclude missing values (coded as NA) from this calculation.

```
> sub = subset(data,!is.na(Temp)& Temp > 12 & Temp < 20, select = Temp)
> apply(sub,2,mean)
Temp
 NaN
```

# Task 12

12.1 Extract the subset of rows of the data frame where Ozone values are above 25 and Temp values are above 70. What is the mean of Wind in this subset?

```
> sub = subset(data, Ozone > 25 & Temp > 70, select = Wind)
> apply(sub,2,mean)
    Wind
8.398333
```

12.2 Extract the subset of rows of the data frame where Ozone values are above 28 and Temp values are above 70. What is the mean of Solar.R in this subset?

```
> sub = subset(data, Ozone > 28 & Temp > 70, select = Solar.R)
> apply(sub,2,mean)
Solar.R
     NA
```

# Task 13

13.1 What is the mean of "Temp" when "Month" is equal to 9 and “Day” is equal to 8?

```
> sub = subset(data, Month == 9 & Day == 8 & !is.na(Temp), select = Temp)
> apply(sub,2,max)
Temp
  78
```

13.2 What is the mean of "Ozone" when "Month" is equal to 9 and “Day” is equal to 8?

```
> sub = subset(data, Month == 9 & Day == 8 & !is.na(Ozone), select = Ozone)
> apply(sub,2,max)
Ozone
   23
```

# Task 14

14.1 What was the minimum ozone value in each of the month (i.e. Month = 5)?

```
> sub = subset(data, Month == 5 & !is.na(Ozone), select = Ozone)
> apply(sub,2,min)
Ozone
    1
> sub = subset(data, Month == 6 & !is.na(Ozone), select = Ozone)
> apply(sub,2,min)
Ozone
   12
> sub = subset(data, Month == 7 & !is.na(Ozone), select = Ozone)
> apply(sub,2,min)
Ozone
    7
> sub = subset(data, Month == 8 & !is.na(Ozone), select = Ozone)
> apply(sub,2,min)
Ozone
    9
> sub = subset(data, Month == 9 & !is.na(Ozone), select = Ozone)
> apply(sub,2,min)
Ozone
    7
```

14.2 What was the maximum ozone value in each of the month (i.e. Month = 5) and "Day" is equal to 8?

```
> sub = subset(data, Month == 5 & Day == 8 & !is.na(Ozone), select = Ozone)
> apply(sub,2,max)
Ozone
   19
> sub = subset(data, Month == 6 & Day == 8 & !is.na(Ozone), select = Ozone)
> apply(sub,2,max)
Ozone
 -Inf
Warning message:
In FUN(newX[, i], ...) : no non-missing arguments to max; returning -Inf
> sub = subset(data, Month == 7 & Day == 8 & !is.na(Ozone), select = Ozone)
> apply(sub,2,max)
Ozone
   97
> sub = subset(data, Month == 8 & Day == 8 & !is.na(Ozone), select = Ozone)
>
> apply(sub,2,max)
Ozone
   89
> sub = subset(data, Month == 9 & Day == 8 & !is.na(Ozone), select = Ozone)
> apply(sub,2,max)
Ozone
   23
```

# Task 15

15.1 Remove all the NAs in quiz_data.csv.

```
> good <- complete.cases(data)
> data[good, ]
```

15.2 Save the quiz_data.csv as "cleaned_quiz_data"

```
> dput(x, file = "cleaned_quiz_data.csv"
+ )
```

15.3 Push "cleaned_quiz_data" to your Github together with this document.