FINOLEX ACADEMY OF MANAGEMENT AND TECHNOLOGY, RATNAGIRI

DEPARTMENT OF MCA

PRACTICAL NO .04
INTRODUCTION TO R PROGRAMMING AND DATA ACQUISITION

QUE 1.Create a variable named carName and assign the value Volvo to it.

ANS :

```
> carName<-"Volvo"
> carName
[1] "Volvo"
```

QUE 2. Use the correct function to combine the text "Hello" with the txt variable, to output "Hello World!".

ANS :

```
> text<-"Hello"
> paste(text,"World!")
[1] "Hello World!"
```

QUE 3. What data type is myVar and x?

x <- 10.5
myVar <- 30

ANS :

```
> x<-10.5
> class(x)
[1] "numeric"
> myVar<-30
> class(myVar)
[1] "numeric"
```

QUE 4. Use the correct function to find the square root of the number 100.

ANS :

```
> x<-100
> sqrt(x)
[1] 10
```

QUE 5.Use the correct function to find the number of characters in the str variable:

str<-“Finolex Academy of Management and Technology”

ANS :

```
> str<-"Finolex Academy of Management and Technology"
> nchar(str)
[1] 44
```

QUE 6. Write a R program to create a sequence of numbers from 20 to 50 and find the mean of numbers from 20 to 60 and sum of numbers from 51 to 91.

ANS :

```
> print("Sequence of numbers from 20 to 50:")
[1] "Sequence of numbers from 20 to 50:"
> print(seq(20,50))
 [1] 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50
> print("Mean of numbers from 20 to 60:")
[1] "Mean of numbers from 20 to 60:"
> print(mean(20:60))
[1] 40
> print("Sum of numbers from 51 to 91:")
[1] "Sum of numbers from 51 to 91:"
> print(sum(51:91))
[1] 2911
```

QUE 7.Write a R program to create three vectors numeric data, character data and logical data. Display the content of the vectors and their type.

ANS :

```
> a = c(1, 2, 3, 4, 0, -1, -2, -3, -4)
> b = c("Red", "Green", "White", "Blue", "Black", "Yellow")
> c = c(TRUE, FALSE, TRUE, TRUE, FALSE, TRUE, FALSE)
> print(a)
[1]  1  2  3  4  0 -1 -2 -3 -4
> print(class(a))
[1] "numeric"
> print(b)
[1] "Red"    "Green"  "White"  "Blue"   "Black"  "Yellow"
```

```
> print(class(b))
[1] "character"
> print(c)
[1]  TRUE FALSE  TRUE  TRUE FALSE  TRUE FALSE
> print(class(c))
[1] "logical"
```

QUE 8.Write a R program to create a data frame from four given vectors.

name = c('Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael', 'Matthew', 'Laura', 'Kevin', 'Jonas')

score = c(12.5, 9, 16.5, 12, 9, 20, 14.5, 13.5, 8, 19)

attempts = c(1, 3, 2, 3, 2, 3, 1, 1, 2, 1)

qualify = c('yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no', 'yes')

ANS :

```
> name = c('Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Mic
hael', 'Matthew', 'Laura', 'Kevin', 'Jonas')
> score = c(12.5, 9, 16.5, 12, 9, 20, 14.5, 13.5, 8, 19)
> attempts = c(1, 3, 2, 3, 2, 3, 1, 1, 2, 1)
> qualify = c('yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', '
no', 'yes')
> print("Original data frame:")
[1] "Original data frame:"
> print(name)
[1] "Anastasia" "Dima"      "Katherine" "James"
[5] "Emily"     "Michael"   "Matthew"   "Laura"
[9] "Kevin"     "Jonas"
> print(score)
[1] 12.5  9.0 16.5 12.0  9.0 20.0 14.5 13.5  8.0 19.0
> print(attempts)
 [1] 1 3 2 3 2 3 1 1 2 1
> print(qualify)
 [1] "yes" "no"  "yes" "no"  "no"  "yes" "yes" "no"  "no"
[10] "yes"
> df = data.frame(name, score, attempts, qualify)
> print(df)
```

```
        name score attempts qualify
1  Anastasia  12.5        1     yes
2       Dima   9.0        3      no
3  Katherine  16.5        2     yes
4      James  12.0        3      no
5      Emily   9.0        2      no
6    Michael  20.0        3     yes
7    Matthew  14.5        1     yes
8      Laura  13.5        1      no
9      Kevin   8.0        2      no
10     Jonas  19.0        1     yes
```

QUE 9.Write a R program to extract specific column from a data frame using column name.

ANS :

```
> exam_data = data.frame(
+     name = c('Anastasia', 'Dima', 'Katherine', 'James', 'Emily', 'Michael',
'Matthew', 'Laura', 'Kevin', 'Jonas'),
+     score = c(12.5, 9, 16.5, 12, 9, 20, 14.5, 13.5, 8, 19),
+     attempts = c(1, 3, 2, 3, 2, 3, 1, 1, 2, 1),
+     qualify = c('yes', 'no', 'yes', 'no', 'no', 'yes', 'yes', 'no', 'no',
'yes')
+ )
> print("Original dataframe:")
[1] "Original dataframe:"
> print(exam_data)
        name score attempts qualify
1  Anastasia  12.5        1     yes
2       Dima   9.0        3      no
3  Katherine  16.5        2     yes
4      James  12.0        3      no
5      Emily   9.0        2      no
6    Michael  20.0        3     yes
7    Matthew  14.5        1     yes
8      Laura  13.5        1      no
9      Kevin   8.0        2      no
10     Jonas  19.0        1     yes
```

```
> print("Extract Specific columns:")
[1] "Extract Specific columns:"
> result <- data.frame(exam_data$name,exam_data$score)
> print(result)
   exam_data.name exam_data.score
1       Anastasia            12.5
2            Dima             9.0
3       Katherine            16.5
4           James            12.0
5           Emily             9.0
6         Michael            20.0
7         Matthew            14.5
8           Laura            13.5
9           Kevin             8.0
10          Jonas            19.0
```

QUE 10.Write a R program to create an ordered factor from data consisting of the names of months.

ANS :

```
> name_of_mon = c("January","February","March","April","May","June","July",
"August", "September","October","November","December","September","October"
,"September","November","August","February","January","November","November"
,"February","May","August","February", "July","December","August","August",
"September","November","September",
+  "February","April")
> print("Original vector:")
[1] "Original vector:"
> print(name_of_mon)
 [1] "January"   "February"  "March"     "April"
 [5] "May"       "June"      "July"      "August"
 [9] "September" "October"   "November"  "December"
[13] "September" "October"   "September" "November"
[17] "August"    "February"  "January"   "November"
[21] "November"  "February"  "May"       "August"
[25] "February"  "July"      "December"  "August"
[29] "August"    "September" "November"  "September"
[33] "February"  "April"
> fac = factor(name_of_mon)
```

```
> print("Ordered factors of the said vector:")
[1] "Ordered factors of the said vector:"
> print(fac)
 [1] January   February  March     April     May
 [6] June      July      August    September October
[11] November  December  September October   September
[16] November  August    February  January   November
[21] November  February  May       August    February
[26] July      December  August    August    September
[31] November  September February  April
12 Levels: April August December February January ... September
> print(table(fac))
fac
    April    August  December  February   January      July
        2         5         2         5         2         2
     June     March       May  November   October September
        1         1         2         5         2         5
```