PRACTICAL SUBMISSION RECORD- A.Y. 2025-26

Class: SYMCA **Division :** A **Semester: III**	**Course Code:** MCA01604 **Course Name:** Data Science Laboratory	**Batch:** S2
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CO No: CO605.1	**Assignment No:** 1	

1. Write a Python/R program to create three vectors a,b,c with 3 integers. Combine the three vectors to become a 3×3 matrix where each column represents a vector. Print the content of the matrix.

```
v1<- c(11,12,13)

v2<- c(21,22,23)

v3<- c(31,32,33)

# Method 1: Created a matrix using cbind method to bind columns

mat<- cbind(v1,v2,v3)

mat
```

```
> mat
     v1 v2 v3
[1,] 11 21 31
[2,] 12 22 32
[3,] 13 23 33
>
```

 # Method 2: Used Matrix function and passed a vector which is combined of 3 vectors ,assigned row name and col names for the matrix

```
combined <- c(v1,v2,v3)

rownames=c("ROW1","ROW2","ROW3")

colnames=c("COL1","COL2","COL3")

matrix3<- matrix(combined, nrow=3,ncol=3, dimnames = list(rownames,colnames))

matrix3
```

```
> matrix3
     COL1 COL2 COL3
ROW1   11   21   31
ROW2   12   22   32
ROW3   13   23   33
>
```

2. Write a Python/R program to create a list containing a vector, a matrix and a list and give names to the elements in the list. Access the first and second element of the list.

```
vec<- c(1,2,3)

mat<- matrix(1:6,nrow = 2,ncol = 3)

innerList<-list(name="Chatgpt",year=2025)

myList<- list(Vector_part=vec,Matrix_part=mat,List_part=innerList)
```

 # accessed first,second and third element of list (i.e innerlist)

myList[1]

myList[2]

myList[3]

```
> myList[1]
$Vector_part
[1] 1 2 3

> myList[2]
$Matrix_part
     [,1] [,2] [,3]
[1,]    1    3    5
[2,]    2    4    6

> myList[3]
$List_part
$List_part$name
[1] "Chatgpt"

$List_part$year
[1] 2025
```

 # accesssed First and Second element of innerlist of list

myList$List_part$name

myList$List_part$year

```
> myList$List_part$name
[1] "Chatgpt"
> myList$List_part$year
[1] 2025
>
```

3. Write a Python/R program to create an array with three columns, three rows, and two "tables", taking two vectors as input to the array. Print the array.

```
vec11 <- c(11,12,13)

vec12 <- c(22,23,24,25,26,27)
```

res <- array(c(vec11,vec12),dim=c(3,3,2))

res

```
> res
, , 1

     [,1] [,2] [,3]
[1,]   11   22   25
[2,]   12   23   26
[3,]   13   24   27

, , 2

     [,1] [,2] [,3]
[1,]   11   22   25
[2,]   12   23   26
[3,]   13   24   27
```

4. Write a Python/R program to create a data frame from four given vectors name,score,attempts and qualify.

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')

dataframe <- data.frame(name,score,attempts,qualify)

dataframe

```
> dataframe
        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
>
```

5. Write a Python/R program to create a factor corresponding to height of women data set, which contains height and weights for a sample of women.

 # Create weight and height vectors

```
weight <- c(45, 44, 54, 56, 55, 47)

height <- c(165, 144, 154, 156, 165, 160)

# Create data frame

WomenData <- data.frame(weight, height)

print("Original WomenData:")

print(WomenData)

# Use cut() to create height categories as a factor

# Define breaks (interval edges) and labels

WomenData$height_category <- cut(WomenData$height,

                    breaks = c(140, 150, 160, 170),

                    labels = c("Short", "Medium", "High"),

                    right = FALSE)  # intervals: [a,b)

# Print updated data frame with height categories

print("WomenData with height_category factor created using cut():")

print(WomenData)

# Print the factor separately to check levels

print("Factor levels and values:")

print(WomenData$height_category)
```

```
> print("WomenData with height_category factor created using cut():")
[1] "WomenData with height_category factor created using cut():"
> print(WomenData)
  weight height height_category
1     45    165            High
2     44    144           Short
3     54    154          Medium
4     56    156          Medium
5     55    165            High
6     47    160            High
>
> # Print the factor separately to check levels
> print("Factor levels and values:")
[1] "Factor levels and values:"
> print(WomenData$height_category)
[1] High   Short  Medium Medium High   High
Levels: Short Medium High
>
```

6. Write Python/R program to Print theFibonacci Sequence

```
n <- 10

a <- 0

b <- 1

count <- 1

while (count <= n) {

        cat(a, " ")

        next_val <- a + b

        a <- b

        b <- next_val

        count <- count + 1 }
```

```
0  1  1  2  3  5  8  13  21  34
>
```

7. Write Python/R program to import and export data from csv, excel, txt file

#install.packages("readr")

```
library(readr)

csvData <- read_csv("C:\\MCA\\SYMCA\\DSLab\\Crime_Incidents_in_2024.csv")

csvData
```

```
> csvData
# A tibble: 29,287 × 25
         X       Y      CCN REPORT_DAT      SHIFT METHOD OFFENSE BLOCK XBLOCK YBLOCK  WARD ANC
     <dbl>   <dbl>    <dbl> <chr>           <chr> <chr>  <chr>   <chr>  <dbl>  <dbl> <dbl> <chr>
 1 394578. 141325. 24089883 2024/06/13 16… DAY   OTHERS THEFT … 3000… 3.95e5 1.41e5     3 3C
 2 397869. 141140. 24090702 2024/06/15 02… EVEN… GUN    ASSAUL… 3800… 3.98e5 1.41e5     4 4C
 3 402085. 138351. 24143013 2024/09/16 15… DAY   OTHERS MOTOR … 1700… 4.02e5 1.38e5     5 5C
 4 397104. 144616. 24143492 2024/09/17 12… DAY   OTHERS THEFT … 6500… 3.97e5 1.45e5     4 4A
 5 397497. 136959  24185085 2024/11/29 10… MIDN… OTHERS THEFT/… 1200… 3.97e5 1.37e5     2 2C
 6 397610. 137008. 24187573 2024/12/04 03… EVEN… OTHERS THEFT/… 1100… 3.98e5 1.37e5     2 2C
 7 399489. 137252. 24198067 2024/12/23 03… EVEN… OTHERS MOTOR … 1000… 3.99e5 1.37e5     6 6E
 8 399582. 129707.  5094764 2024/09/30 04… MIDN… GUN    HOMICI… 100 … 4.00e5 1.30e5     8 8D
 9 400135. 130213. 23203397 2024/01/05 18… DAY   OTHERS MOTOR … 3300… 4.00e5 1.30e5     8 8C
10 396385. 139038. 24000436 2024/01/01 21… EVEN… OTHERS THEFT/… 2200… 3.96e5 1.39e5     1 1C
# i 29,277 more rows
```

#install.packages("readxl")

library(readxl)

excelData <- read_excel("C:\\MCA\\SYMCA\\DSLab\\sample.xlsx") # Replace with actual path

excelData

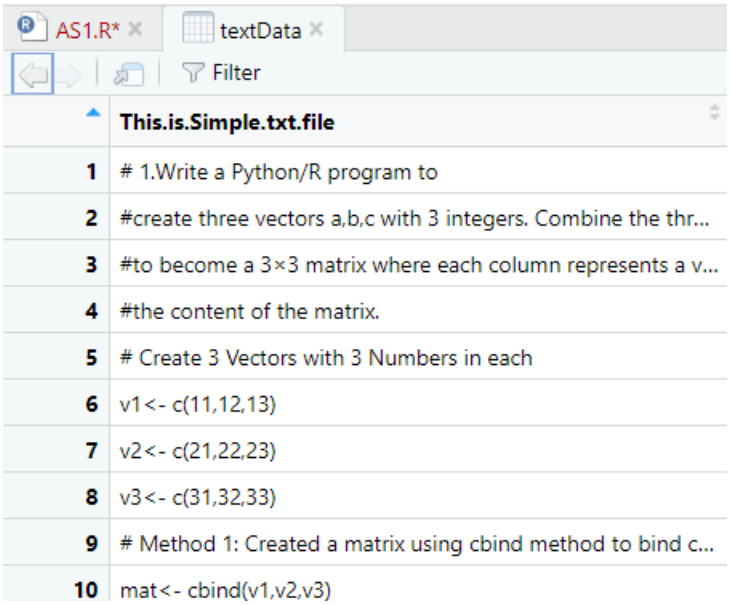
```
> excelData
# A tibble: 100 × 8
   `0.0` `First Name` `Last Name` Gender Country          Age Date          Id
   <dbl> <chr>        <chr>       <chr>  <chr>          <dbl> <chr>      <dbl>
 1     1 Dulce        Abril       Female United States     32 15/10/2017  1562
 2     2 Mara         Hashimoto   Female Great Britain     25 16/08/2016  1582
 3     3 Philip       Gent        Male   France            36 21/05/2015  2587
 4     4 Kathleen     Hanner      Female United States     25 15/10/2017  3549
 5     5 Nereida      Magwood     Female United States     58 16/08/2016  2468
 6     6 Gaston       Brumm       Male   United States     24 21/05/2015  2554
 7     7 Etta         Hurn        Female Great Britain     56 15/10/2017  3598
 8     8 Earlean      Melgar      Female United States     27 16/08/2016  2456
 9     9 Vincenza     Weiland     Female United States     40 21/05/2015  6548
10    10 Fallon       Winward     Female Great Britain     28 16/08/2016  5486
# ℹ 90 more rows
```

textData <- read.delim("C:\\MCA\\SYMCA\\DSLab\\SampleData.txt", header = TRUE)

textData

View(textData)

```
> textData
                                                           This.is.Simple.txt.file
1                                                      # 1.Write a Python/R program to
2                        #create three vectors a,b,c with 3 integers. Combine the three vectors
3                          #to become a 3x3 matrix where each column represents a vector. Print
4                                                              #the content of the matrix.
5                                                   # Create 3 Vectors with 3 Numbers in each
6                                                                        v1<- c(11,12,13)
7                                                                        v2<- c(21,22,23)
8                                                                        v3<- c(31,32,33)
9                            # Method 1: Created a matrix using cbind method to bind columns
10                                                                    mat<- cbind(v1,v2,v3)
```



AS1.R* | textData

Filter

	This.is.Simple.txt.file
1	# 1.Write a Python/R program to
2	#create three vectors a,b,c with 3 integers. Combine the thr...
3	#to become a 3×3 matrix where each column represents a v...
4	#the content of the matrix.
5	# Create 3 Vectors with 3 Numbers in each
6	v1<- c(11,12,13)
7	v2<- c(21,22,23)
8	v3<- c(31,32,33)
9	# Method 1: Created a matrix using cbind method to bind c...
10	mat<- cbind(v1,v2,v3)

8. Write a Python/R program to find the sum of digits of a number reducing it to one digit using repeat loop.

```
n<-num<- 67

sum<-0

while(num>0){

sum<-sum+num

num<-num-1

}

paste("Total of Sum of ",n," numbers is : ",sum)
```

```
> paste("Total of Sum of ",n," numbers is : ",sum)
[1] "Total of Sum of  67  numbers is :  2278"
>
```