

# 20BCE1025\_\_Abhishek\_\_N\_\_N\_FDA Lab Experiment-4-a

20BCE1025\_\_Abhishek\_\_N\_\_N

2022-09-09

1. Create a list to maintain the details of a student such as registration number, name, no. of courses registered and marks in each subject.

```
studentDetails <-  
  list(  
    regNo = c('20BCE1025', '19BAI1223', '21EEE7899'),  
    name = c('Abhishek', 'Ram', 'Bheem'),  
    courses = c('Physics', 'Chemistry', 'Mathematics'),  
    marks = matrix(  
      c(98, 99, 95, 43, 28, 70, 23, 78, 76),  
      nrow = 3,  
      ncol = 3,  
      byrow = TRUE  
    )  
  )  
studentDetails
```

```
## $regNo  
## [1] "20BCE1025" "19BAI1223" "21EEE7899"  
##  
## $name  
## [1] "Abhishek" "Ram"      "Bheem"  
##  
## $courses  
## [1] "Physics"      "Chemistry"    "Mathematics"  
##  
## $marks  
##      [,1] [,2] [,3]  
## [1,]  98  99  95  
## [2,]  43  28  70  
## [3,]  23  78  76
```

2. Retrieve the name of the students.

```
studentDetails$name
```

```
## [1] "Abhishek" "Ram"      "Bheem"
```

3. Extract only the registration number and the marks of the students.

```
studentDetails[c(1,4)]
```

```
## $regNo
## [1] "20BCE1025" "19BAI1223" "21EEE7899"
##
## $marks
##      [,1] [,2] [,3]
## [1,]   98   99   95
## [2,]   43   28   70
## [3,]   23   78   76
```

4. Access the mark in the first course registered.

```
studentDetails$marks[,1]
```

```
## [1] 98 43 23
```

5. Modify the mark entry in the last course as 5 more than the existing mark.

```
studentDetails$marks[, 3] <- (studentDetails$marks[, 3] + 5)
studentDetails$marks
```

```
##      [,1] [,2] [,3]
## [1,]   98   99  100
## [2,]   43   28   75
## [3,]   23   78   81
```

---

Q. A college has conducted technical events for the students. It maintains the name of the participant and the score obtained in different events.

1. Create a data frame by considering 5 students and 4 events. Each event has a maximum score of 10. If a student participates in an event, its entry contains the score value and 0 otherwise.

```
eventScore <- data.frame(
  id = c(1:5),
  name = c('Ram', 'Bheem', 'Soam', 'Raheem', 'Sham'),
  coding_event = c(10, 2, 0, 7, 5),
  design_event = c(0, 10, 4, 7, 0),
  hackathon_event = c(2, 4, 10, 0, 0),
  cyber_event = c(7, 0, 8, 3, 2)
)
```

2. View the contents of the data frame.

```
eventScore
```

```
##   id  name coading_event design_event hackathon_event cyber_event
## 1  1   Ram           10           0             2           7
## 2  2  Bheem           2          10             4           0
## 3  3   Soam           0           4            10           8
## 4  4 Raheem           7           7             0           3
## 5  5   Sham           5           0             0           2
```

3. Find the total score of each participant.

```
total<-apply(eventScore[,3:6], 1, sum)
total
```

```
## [1] 19 16 22 17 7
```

4. Append a column to include the total score of the participants and view the data frame.

```
eventScore$total=total
eventScore
```

```
##   id  name coading_event design_event hackathon_event cyber_event total
## 1  1   Ram           10           0             2           7    19
## 2  2  Bheem           2          10             4           0    16
## 3  3   Soam           0           4            10           8    22
## 4  4 Raheem           7           7             0           3    17
## 5  5   Sham           5           0             0           2     7
```

5. Find the maximum score and display the name of the participant who scored it.

```
max_score<-apply(eventScore[,3:6],2,max)
max_score
```

```
##   coading_event  design_event hackathon_event  cyber_event
##             10             10             10             8
```

```
max_score_index<-apply(eventScore[,3:6] , 2, which.max)
eventScore[max_score_index,2]
```

```
## [1] "Ram"  "Bheem" "Soam"  "Soam"
```

6. Compute the average score of each events and append it as a new row in the data frame.

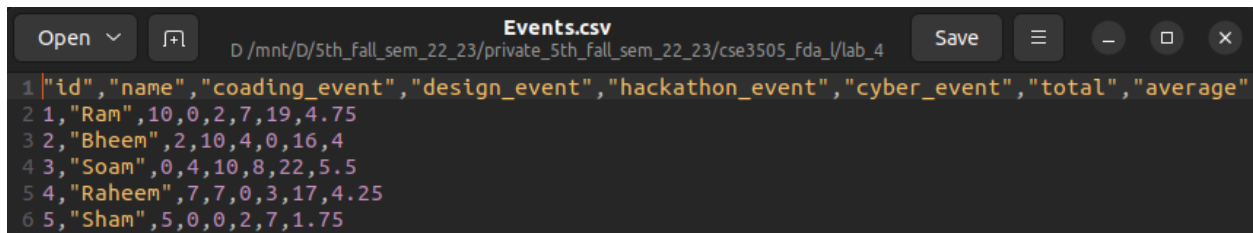
```
eventScore$average<-apply(eventScore[,3:6], 1, mean)
eventScore
```

```
##   id  name coading_event design_event hackathon_event cyber_event total
## 1  1   Ram           10           0             2           7    19
## 2  2  Bheem           2          10             4           0    16
## 3  3   Soam           0           4            10           8    22
## 4  4 Raheem           7           7             0           3    17
## 5  5   Sham           5           0             0           2     7
```

```
##    average
## 1    4.75
## 2    4.00
## 3    5.50
## 4    4.25
## 5    1.75
```

7. Store the details in a comma separated values (csv) file. Also suppress the row numbers.

```
# I am using linux so file path formats are different
write.csv(eventScore, "./Events.csv", row.names = FALSE)
```



8. Read the content of 'Events.csv' in a data frame and view it.

```
eventScore2<-read.csv("./Events.csv")
eventScore2
```

```
##    id  name coading_event design_event hackathon_event cyber_event total
## 1  1   Ram           10           0             2           7      19
## 2  2  Bheem            2          10             4           0      16
## 3  3   Soam            0           4          10           8      22
## 4  4 Raheem            7           7             0           3      17
## 5  5   Sham            5           0             0           2       7
##    average
## 1    4.75
## 2    4.00
## 3    5.50
## 4    4.25
## 5    1.75
```

9. Access the scores of participants in event2 using the column name.

```
eventScore2["design_event"]
```

```
##    design_event
## 1             0
## 2            10
## 3             4
## 4             7
## 5             0
```

10. Use index number to retrieve the same data.

```
eventScore2[4]
```

```
##    design_event
## 1             0
## 2            10
## 3             4
## 4             7
## 5             0
```

11. Extract the score of third participant in event3.

```
eventScore2[3,5]
```

```
## [1] 10
```

12. Extract the scores of the first and second participant in all the events.

```
eventScore[1:2,1:6]
```

```
##   id  name coading_event design_event hackathon_event cyber_event
## 1  1   Ram           10           0             2           7
## 2  2 Bheem            2           10             4           0
```

13. Display the names and total scores of all participants.

```
eventScore[,c(2,7)]
```

```
##      name total
## 1    Ram    19
## 2  Bheem    16
## 3   Soam    22
## 4 Raheem    17
## 5   Sham     7
```

14. Make the column “name” as the row index of the data frame.

```
rownames(eventScore2)<-eventScore$name
eventScore2
```

```
##      id  name coading_event design_event hackathon_event cyber_event total
## Ram    1   Ram           10           0             2           7    19
## Bheem   2 Bheem            2           10             4           0    16
## Soam    3   Soam            0           4            10           8    22
## Raheem  4 Raheem            7           7             0           3    17
## Sham    5   Sham            5           0             0           2     7
##      average
## Ram        4.75
## Bheem       4.00
## Soam        5.50
## Raheem      4.25
## Sham        1.75
```

15. Display the names of the students participated in event3.

```
subset(eventScore2, hackathon_event>0, select = name)
```

```
##      name
## Ram    Ram
## Bheem Bheem
## Soam   Soam
```

16. Obtain the names whose total score is above its average.

```
total_avg=mean(eventScore2$total)
total_avg
```

```
## [1] 16.2
```

```
subset(eventScore2, total>total_avg, select = name)
```

```
##      name
## Ram    Ram
## Soam   Soam
## Raheem Raheem
```