

1. INPUT::

```
print("Sequence of numbers from 20 to 50:")
print(seq(20,50))
print("Mean of numbers from 20 to 60:")
print(mean(20:60))
print("Sum of numbers from 51 to 91:")
print(sum(51:91))
```

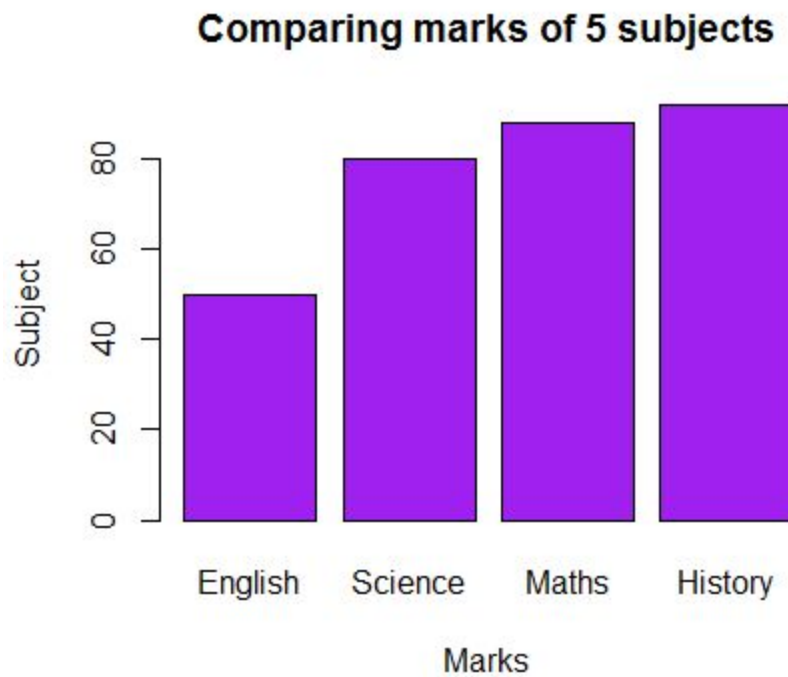
OUTPUT::

```
[1] "Sequence of numbers from 20 to 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
[1] "Mean of numbers from 20 to 60:"
[1] 40
[1] "Sum of numbers from 51 to 91:"
[1] 2911
```

2. INPUT::

```
marks = c(50,80,88,92)
barplot(marks,
main = "Comparing marks of 5 subjects",
xlab = "Marks",
ylab = "Subject",
names.arg = c("English", "Science", "Maths", "History"),
col = "purple",
horiz = FALSE)
```

OUTPUT::



3. INPUT::

```
df1 = data.frame(y1 = c(0, 1, 2), y2 = c(3, 4, 5))
df2 = data.frame(y1 = c(6, 7, 8), y2 = c(9, 10, 11))
new_list = list(df1, df2)
print("New list:")
print(new_list)
print("Data frame-1")
print(new_list[[1]])
print("Data frame-2")
print(new_list[[2]])
```

OUTPUT::

```
[1] "New list:"
[[1]]
  y1 y2
1  0  3
2  1  4
3  2  5
[[2]]
  y1 y2
1  6  9
```

```

2 7 10
3 8 11
[1] "Data frame-1"
  y1 y2
1 0 3
2 1 4
3 2 5
[1] "Data frame-2"
  y1 y2
1 6 9
2 7 10
3 8 11

```

4. INPUT::

```

M = matrix(c(1:16), nrow = 4, byrow = TRUE)
print("Original Matrix:")
print(M)
list1 = list(g1 = 1:10, g2 = "R Programming", g3 = "HTML")
print("Original list:")
print(list1)
print("Add a new vector to the said list:")
list1$g4 = "Python"
print(list1)

```

OUTPUT::

```

[1] "Original Matrix:"
      [,1] [,2] [,3] [,4]
[1,]  1   2   3   4
[2,]  5   6   7   8
[3,]  9  10  11  12
[4,] 13  14  15  16
[1] "Original list:"
$g1
[1] 1 2 3 4 5 6 7 8 9 10
$g2
[1] "R Programming"
$g3
[1] "HTML"
[1] "Add a new vector to the said list:"
$g1
[1] 1 2 3 4 5 6 7 8 9 10
$g2
[1] "R Programming"

```

```
$g3  
[1] "HTML"  
$g4  
[1] "Python"
```

5. INPUT::

```
row_names = c("row1", "row2", "row3", "row4")  
col_names = c("col1", "col2", "col3", "col4")  
M = matrix(c(1:16), nrow = 4, byrow = TRUE, dimnames =  
list(row_names,col_names))  
print("Original Matrix:")  
print(M)
```

OUTPUT::

```
[1] "Original Matrix:"  
      col1 col2 col3 col4  
row1   1   2   3   4  
row2   5   6   7   8  
row3   9  10  11  12  
row4  13  14  15  16
```

6. INPUT::

```
for (n in 1:40) {  
  if (n %% 3 == 0 & n %% 5 == 0) {print("Orange")}  
  else if (n %% 3 == 0) {print("Apple")}  
  else if (n %% 5 == 0) {print("Mango")}  
  else print(n)  
}
```

OUTPUT::

```
[1] 1  
[1] 2  
[1] "Apple"  
[1] 4  
[1] "Mango"  
[1] "Apple"  
[1] 7  
[1] 8  
[1] "Apple"  
[1] "Mango"  
[1] 11  
[1] "Apple"
```

```
[1] 13
[1] 14
[1] "Orange"
[1] 16
[1] 17
[1] "Apple"
[1] 19
[1] "Mango"
[1] "Apple"
[1] 22
[1] 23
[1] "Apple"
[1] "Mango"
[1] 26
[1] "Apple"
[1] 28
[1] 29
[1] "Orange"
[1] 31
[1] 32
[1] "Apple"
[1] 34
[1] "Mango"
[1] "Apple"
[1] 37
[1] 38
[1] "Apple"
[1] "Mango"
```

7. INPUT::

```
num = as.integer(readline(prompt="Enter a number: "))
if((num %% 2) == 0) {
  print(paste(num,"is Even"))
} else {
  print(paste(num,"is Odd"))
}
```

OUTPUT::

```
Enter a number: 25
[1] "25 is Odd"
```

8. INPUT::

```
name = c('Varun', 'Akash', 'Kartik', 'Aryan', 'Kulsoom', 'Sujeet', 'Sneha', 'Shreya',
'Yashasvi', 'Simran')
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', 'yes', 'no', 'yes', 'yes', 'yes', 'no', 'yes')
print("Original data frame:")
print(name)
print(score)
print(attempts)
print(qualify)
df = data.frame(name, score, attempts, qualify)
print(df)
```

OUTPUT::

```
[1] "Original data frame:"
[1] "Varun" "Akash" "Kartik" "Aryan" "Kulsoom" "Sujeet" "Sneha"
"Shreya" "Yashasvi" "Simran"
[1] 12.5 9.0 16.5 12.0 9.0 20.0 14.5 13.5 8.0 19.0
[1] 1 3 2 3 2 3 1 1 2 1
[1] "yes" "no" "yes" "yes" "no" "yes" "yes" "yes" "no" "yes"
   name score attempts qualify
1  Varun 12.5      1    yes
2  Akash  9.0      3    no
3  Kartik 16.5      2   yes
4  Aryan 12.0      3   yes
5 Kulsoom  9.0      2    no
6  Sujee 20.0      3   yes
7  Sneha 14.5      1   yes
8 Shreya 13.5      1   yes
9 Yashasvi 8.0      2    no
10 Simran 19.0      1   yes
```

9. INPUT::

```
row_names = c("row1", "row2", "row3", "row4")
col_names = c("col1", "col2", "col3", "col4")
M = matrix(c(1:16), nrow = 4, byrow = TRUE, dimnames = list(row_names,
col_names))
print("Original Matrix:")
print(M)
print("Access the element at 3rd column and 2nd row:")
print(M[2,3])
```

```

print("Access only the 3rd row:")
print(M[3,])
print("Access only the 4th column:")
print(M[,4])

```

OUTPUT::

```

[1] "Original Matrix:"
      col1 col2 col3 col4
row1    1    2    3    4
row2    5    6    7    8
row3    9   10   11   12
row4   13   14   15   16
[1] "Access the element at 3rd column and 2nd row:"
[1] 7
[1] "Access only the 3rd row:"
      col1 col2 col3 col4
      9   10   11   12
[1] "Access only the 4th column:"
row1 row2 row3 row4
  4    8   12   16

```

10.

1) INPUT::

```

a<-c(1,2,3)
b<-c(4,5,6)
c<-c(7,8,9)
m<-cbind(a,b,c)
print("Content of the said matrix:")
print(m)

```

OUTPUT::

```

      a b c
[1,] 1 4 7
[2,] 2 5 8
[3,] 3 6 9

```

2) INPUT::

```

x<-2 while(x < 15) {x <- x^2-10; if (x == 20) break; print(x^2); }

```

OUTPUT::

```

[1] 36
[1] 676

```

3) INPUT::

```
print_factors = function(n) {  
  print(paste("The factors of",n,"are:"))  
  for(i in 1:n) {  
    if((n %% i) == 0) {  
      print(i)  
    }  
  }  
}  
print_factors(4)  
print_factors(7)  
print_factors(12)
```

OUTPUT::

```
[1] "The factors of 4 are:"  
[1] 1  
[1] 2  
[1] 4  
[1] "The factors of 7 are:"  
[1] 1  
[1] 7  
[1] "The factors of 12 are:"  
[1] 1  
[1] 2  
[1] 3  
[1] 4  
[1] 6  
[1] 12
```

11. INPUT::

```
row_names = c("row1", "row2", "row3", "row4")  
col_names = c("col1", "col2", "col3", "col4")  
M = matrix(c(1:16), nrow = 4, byrow = TRUE, dimnames = list(row_names,  
  col_names))  
print("Original Matrix:")  
print(M)  
result = M[M[,3] > 7,]  
print("New submatrix:")  
print(result)
```


OUTPUT::

```
[1] "Original Matrix:"
      col1 col2 col3 col4
row1    1   2   3   4
row2    5   6   7   8
row3    9  10  11  12
row4   13  14  15  16
[1] "New submatrix:"
      col1 col2 col3 col4
row3    9  10  11  12
row4   13  14  15  16
```

12. INPUT::

```
Fibonacci <- numeric(10)
Fibonacci[1] <- Fibonacci[2] <- 1
for (i in 3:10) Fibonacci[i] <- Fibonacci[i - 2] + Fibonacci[i - 1]
print("First 10 Fibonacci numbers:")
print(Fibonacci)
```

OUTPUT::

```
[1] "First 10 Fibonacci numbers:"
[1] 1 1 2 3 5 8 13 21 34 55
```

13. INPUT::

```
num = as.integer(readline(prompt = "Enter a number: "))
if(num < 0)
{
  print("Enter a positive number")
}
else
{
  sum = 0
  while(num > 0)
  {
    sum = sum + num
    num = num - 1
  }
  print(paste("The sum is", sum))
}
```

OUTPUT::

Enter a number: 45

```
[1] "The sum is 1035"
```

14. INPUT::

```
x = c(10, 20, 30, 20, 20, 25, 9, 26)
print("Original Vectors:")
print(x)
print("Sort in ascending order:")
print(sort(x))
print("Sort in descending order:")
print(sort(x, decreasing=TRUE))
print("Find highest value in a given vector:")
l = length(x)
print(sort(x, partial = l)[l])
print("Find second highest value in a given vector:")
l = length(x)
print(sort(x, partial = l-1)[l-1])
u = length(x)
print("The Length is::")
print(u)
```

OUTPUT::

```
[1] "Original Vectors:"
[1] 10 20 30 20 20 25 9 26
[1] "Sort in ascending order:"
[1] 9 10 20 20 20 25 26 30
[1] "Sort in descending order:"
[1] 30 26 25 20 20 20 10 9
[1] "Find highest value in a given vector:"
[1] 30
[1] "Find second highest value in a given vector:"
[1] 26
[1] "The Length is::"
[1] 8
```

15. INPUT::

```
row_names= c("row1","row2","row3","row4")
col_names= c("col1","col2","col3","col4")
M = matrix(c(1:16),nrow=4,byrow=TRUE,dimnames=list(row_names,col_names))
print(M)
```

```
print(M[2,3])
print(M[3,])
print(M[:,4])
```

OUTPUT::

```
      col1 col2 col3 col4
row1    1    2    3    4
row2    5    6    7    8
row3    9   10   11   12
row4   13   14   15   16
[1] 7
      col1 col2 col3 col4
      9   10   11   12
row1 row2 row3 row4
      4    8   12   16
```