

ITA0448- R Programming

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1.

The screenshot shows the RStudio interface with a script editor containing the following R code:

```
1 x = vector("numeric", 6)
2 print("numeric type:")
3 print(x)
4 c = vector("complex", 6)
5 print("complex type:")
6 print(c)
7 l = vector("logical", 6)
8 print("logical type:")
9 print(l)
10 chr = vector("character", 6)
11 print("character type:")
12 print(chr)
```

The console output shows the execution of these commands, confirming the creation and printing of vectors of numeric, complex, logical, and character types.

2.

The screenshot shows the RStudio interface with a script editor containing the following R code:

```
1 x = c(10,30,20,20,25,9,26,38,40,60)
2 print("sum of the vector:")
3 print(sum(x))
4 print("mean of the vector:")
5 print(mean(x))
6 print("product of the vector:")
7 print(prod(x))
```

The console output shows the execution of these commands, displaying the sum, mean, and product of the vector x.

The screenshot displays the RStudio interface with the following components:

- Script Editor:** Contains R code for creating a vector, sorting it, and printing it in different orders.


```
1 x = c(10,30, 20, 25, 9, 26,38,40,60)
2 print("vector in ascending order")
3 sort(x)
4 print("vector in descending order")
5 print(sort(x, decreasing=TRUE))
```
- Console:** Shows the output of the R script execution.


```
> print(c)
[1] 0-01 0-01 0-01 0-01 0-01 0-01
> l = vector("logical", 6)
> print("Logical type:")
[1] "Logical type"
> print(l)
[1] FALSE FALSE FALSE FALSE FALSE
> chr = vector("character", 6)
> print("Character type:")
[1] "Character type"
> print(chr)
[1] "" "" "" "" "" ""
> x = c(10,30, 20, 25, 9, 26,38,40,60)
> print("vector in ascending order")
[1] "vector in ascending order"
> sort(x)
[1] 9 10 20 25 26 30 38 40 60
> print("vector in descending order")
[1] "vector in descending order"
> print(sort(x, decreasing=TRUE))
[1] 60 40 38 30 26 25 20 10 9
```
- Environment Pane:** Lists the objects in the global environment.

Object	Description
a	1 obs. of 1 variable
input	32 obs. of 2 variables
relation	List of 12

The screenshot displays the RStudio environment. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. The main script editor shows a file named 'Untitled1.R' with the following R code:

```
1 x = c(10,30, 20, 20, 25, 9, 26,38,40,60)
2 print("4th highest number")
3 n=4
4 print(sort(x,TRUE)[n])
```

The console at the bottom shows the output of the code:

```
> print(sort(x,TRUE)[n])
[1] 25
```

The Environment pane on the right shows the following variables:

- a**: 1 obs. of 1 variable
- input**: 32 obs. of 2 variables
- relation**: List of 12
- data**: num [1:9] 56 79 77 48 90 68 79 92 71
- mean**: 12
- meanofplayerleft**: 4
- n**: 6
- nmean**: 10
- result**: named num 76.2
- x**: num [1:10] 10 30 20 20 25 9 26 38 40 60
- y**: num [1:8] 0 10 1 8 2 3 4 1
- minmax**: function (<v>)
- replace**: function (<v>)

The bottom status bar shows the system tray with icons for Windows, Search, and various applications, along with the date and time: 10:34, 02-01-2023.

5.

The screenshot displays the RStudio environment with the following components:

- Source Editor:** Contains R code for creating a vector, converting it to a factor, and printing the results.
- Console:** Shows the execution output, including the creation of the vector, the factor conversion, and the printed tables.
- Environment Pane:** Lists the objects in the global environment, including 'mons_v', 'data', 'f', 'mean', 'meanofplayerleft', 'result', 'x', 'y', 'minmax', and 'replace'.

R Code (Source Editor):

```
1 mons_v = c("March", "April", "January", "November", "January",
2 "September", "October", "September", "November", "August", "February",
3 "January", "November", "November", "February", "May", "August", "February",
4 "July", "December", "August", "August", "September", "November", "September",
5 "February", "April")
6 f = factor(mons_v)
7 print("Ordered factors of the said vector:")
8 print(f)
9 print(table(f))
```

Console Output:

```
R421 ~>
> print(table(f))
f
April    August    December    February    January    July    March    May    November    October    September
2         4         1         4         3         1         1         1         5         1         4

> mons_v = c("March", "April", "January", "November", "January",
+ "September", "October", "September", "November", "August", "February",
+ "January", "November", "November", "February", "May", "August", "February",
+ "July", "December", "August", "August", "September", "November", "September",
+ "February", "April")
> f = factor(mons_v)
> print("Ordered factors of the said vector:")
[1] "Ordered factors of the said vector:"
> print(f)
[1] March    April    January    November    January    September    October    September    November    August    February
[2] January    November    November    February    May    August    February    July    December    August    August
[23] September    November    September    February    April
Levels: April August December February January July March May November October September
> print(table(f))
f
April    August    December    February    January    July    March    May    November    October    September
2         4         1         4         3         1         1         1         5         1         4
```

Environment Pane:

Object	Class	Value
c	cplx	[1:6] 0+0i 0+0i 0+0i ...
chr	chr	[1:6] " " " " " " " "
data	num	[1:9] 56 79 77 48 90 68 79 92 71
f	Factor w/ 11 levels	"April", "August", ..., 7 1 5 9 5 11 10 11 9 2 ...
log1	log1	[1:6] FALSE FALSE FALSE FALSE FALSE FALSE
mean	num	12
meanofplayerleft	num	4
mons_v	chr	[1:27] "March" "April" "January" "November" "January" "September" "Oc-
mean	num	10
result	named num	76.2
x	num	[1:10] 10 30 20 20 25 9 26 38 40 60
y	num	[1:8] 0 10 1 8 2 3 4 1
minmax	function	(x)
replace	function	(v)