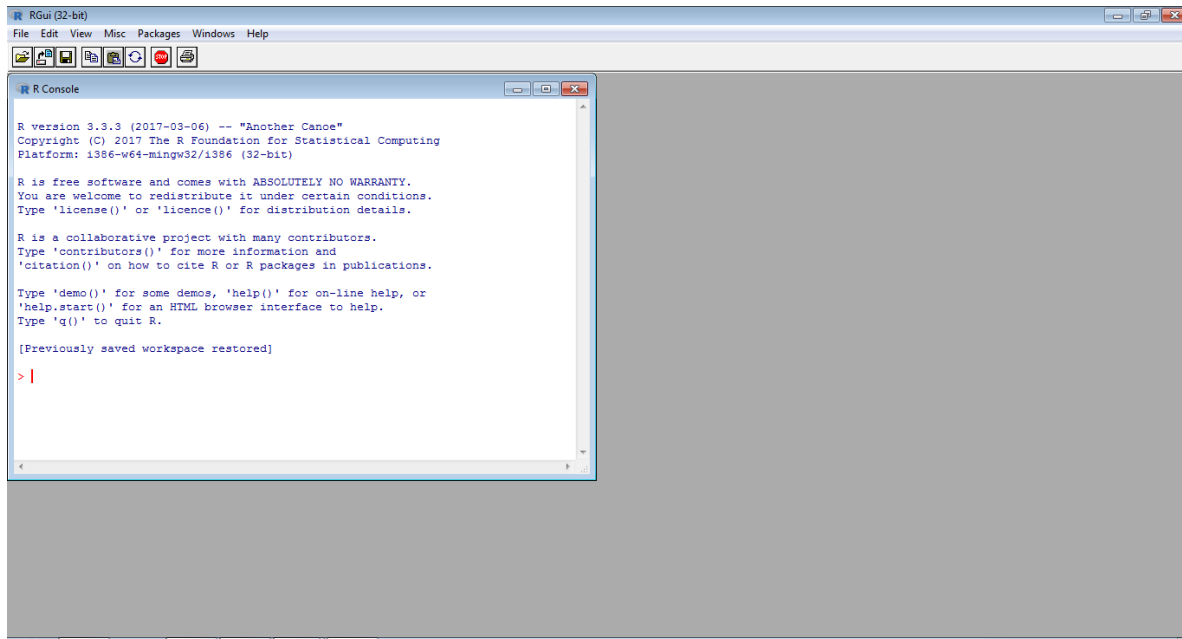


R Practical

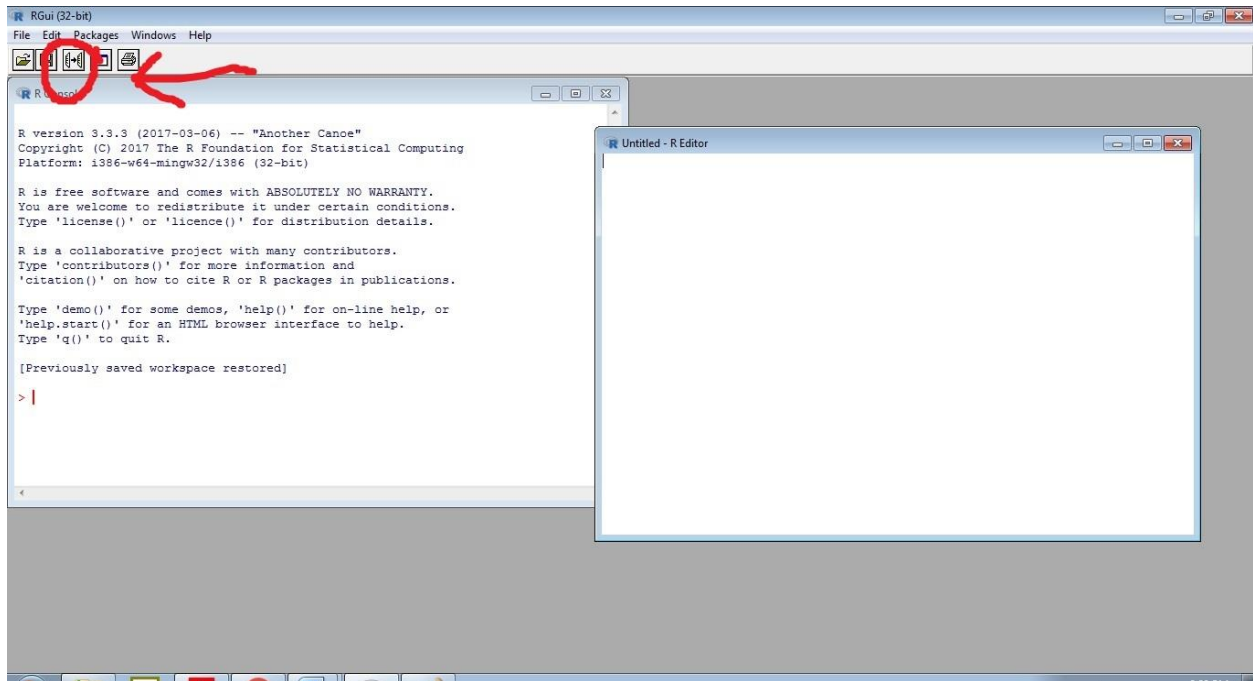
R is a free software. Download R software from the following link:

<https://cran.r-project.org/bin/windows/base/>

Once you install the software, R Console will open.

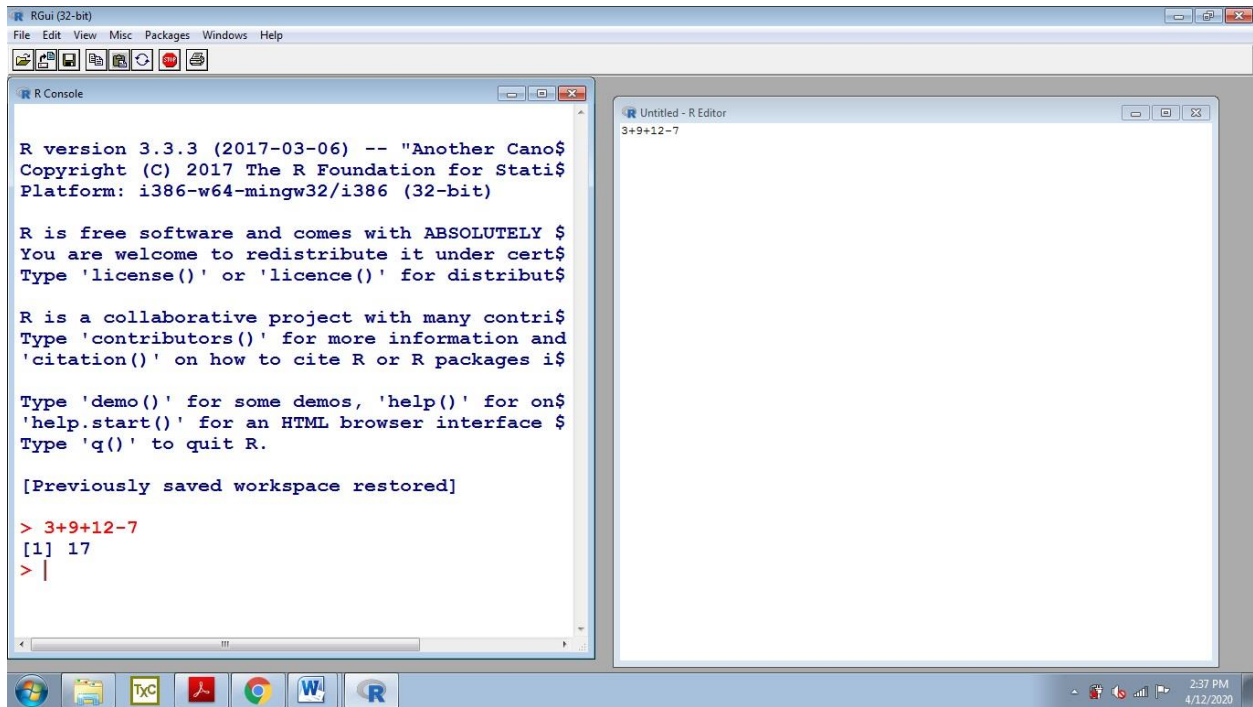


Execution is done and output is displayed in the Console. To write the commands, go to File --> New Script, R Editor will open.



Commands are written in Editor and then to execute the commands, click on the run tab (below packages, see in the last picture circled in red) to get the output.

Next, we try a simple calculation using R, to calculate $3+9+12-7$. For this, we first write the mathematical expression $3+9+12-7$ in the editor, click on the run tab and output along with the command will be displayed in the console on the left and side.



Next, try

> 12 + 17/2 - 3/4 * 2.5
[1] 18.625

(Command)
(output)

> factorial(4)
[1] 24

(Command)
(output)

> abs(12-17*2/3-9)
[1] 8.333333

> log(2, 10)
[1] 0.30103

> log(2, base = 10)
[1] 0.30103

> log10(2)
[1] 0.30103

```
> exp(0.6931472)
```

```
[1] 2
```

```
> sin(45 * pi / 180)
```

```
[1] 0.7071068
```

In the next example we store the value of an expression in a variable ans1 and then call the value of the variable ans1.

```
> ans1 = 23 + 14/2 - 18 + (7 * pi/2)
```

```
> ans1
```

```
[1] 22.99557
```

On executing the first command the value of the expression is being stored in the variable ans1, on executing the second command the value of the variable ans1 is displayed. Further, we define another variable ans2 and then write another command involving these two variables defined.

```
> ans2 = 13 + 11 + (17 - 4/7)
```

```
> ans2
```

```
[1] 40.42857
```

```
> ans1 + ans2 / 2
```

```
[1] 43.20986
```

```
> ans3 <- ans1 * ans2
```

```
> ans3
```

```
[1] 929.6782
```

In the above example value of $ans1 * ans2$ is stored in the variable ans3. You may also use = sign instead of <-

To enter data we use `c()` command, separated by commas.

```
> data1 = c(3, 5, 7, 5, 3, 2, 6, 8, 5, 6, 9)
```

```
> data1
```

```
[1] 3 5 7 5 3 2 6 8 5 6 9
```

To add few more entries in `data1`, we can define another variable `data2` and again use `c()` command.

```
> data2 = c(data1, 4, 5, 7, 3, 4)
```

```
> data2
```

```
[1] 3 5 7 5 3 2 6 8 5 6 9 4 5 7 3 4
```

To enter text items into data, use quotes to differentiate them from numbers. You may use single or double quotes; R converts them all to double.

```
> day1 = c('Mon', 'Tue', 'Wed', 'Thu')
```

```
> day1
```

```
[1] "Mon" "Tue" "Wed" "Thu"
```

You may add more entries, like Fri is added to the list `day1`.

```
> day1 = c(day1, 'Fri')
```

```
> day1
```

```
[1] "Mon" "Tue" "Wed" "Thu" "Fri"
```

You may also mix text and numbers, the entire data object becomes a text variable and the numbers are converted to text.

```
> mix = c(data1, day1)
```

```
> mix
```

```
[1] "3" "5" "7" "5" "3" "2" "6" "8" "5"  
[10] "6" "9" "Mon" "Tue" "Wed" "Thu" "Fri"
```

Note: Here [10] denotes 10th entry will follow.