EXP 1 : R AS CALCULATOR APPLICATION

a. Using with and without R objects on console
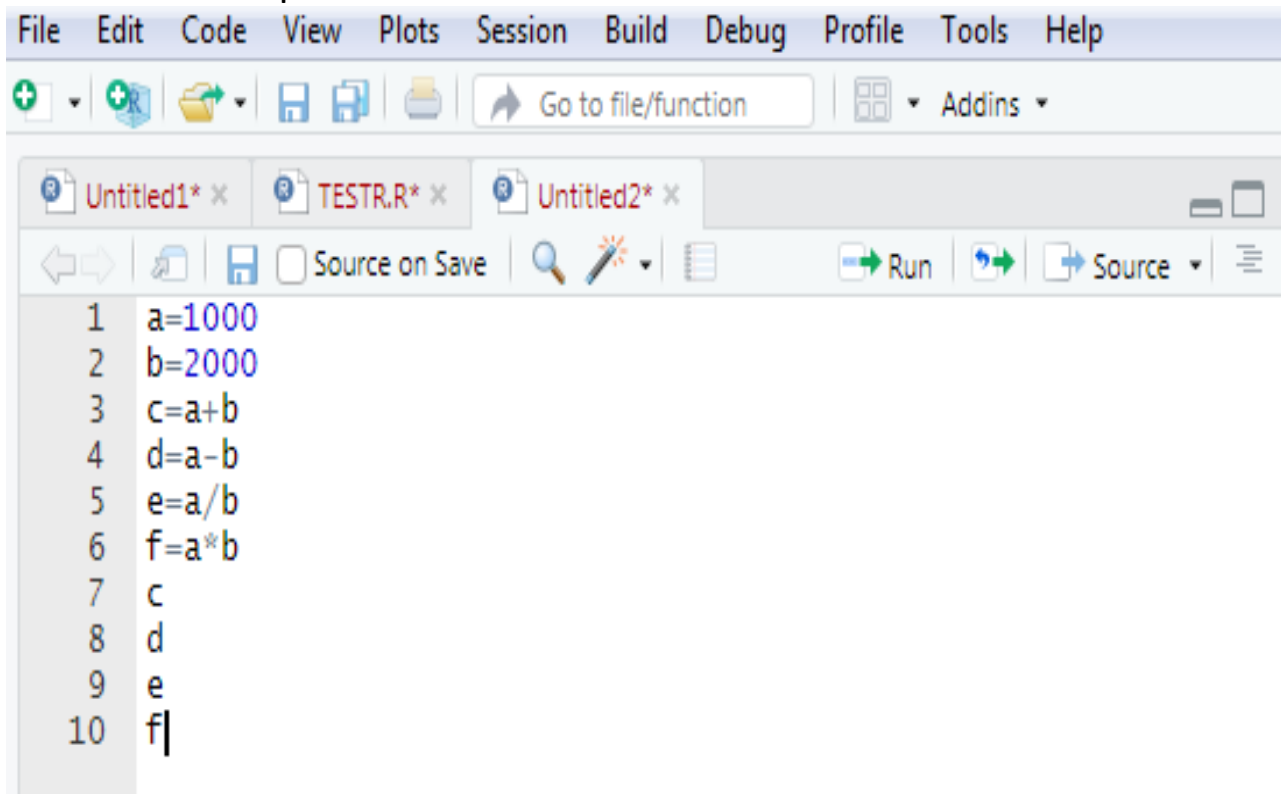
```
> 3589+123
[1] 3712
> 3589*123
[1] 441447
> 3589-123
[1] 3466
> 3589/123
[1] 29.17886
> A=4500
> B=1250
> C=A+B
> C
[1] 5750
>
```

b. Using mathematical functions on console

```
> A=745
> class(A)
[1] "numeric"
> B=400
> CLASS(B)
Error in CLASS(B) : could not find function "CLASS"
> class(B)
[1] "numeric"
> sum<-A-B
> Summary
groupGenericFunction for "Summary" defined from package "base"

function (x, ..., na.rm = FALSE)
standardGeneric("Summary")
<bytecode: 0x000000010a93a68>
<environment: 0x000000007222270>
Methods may be defined for arguments: x, na.rm
Use  showMethods("Summary")  for currently available ones.
> sum<A-B
[1] FALSE
> sum
[1] 345
>
```
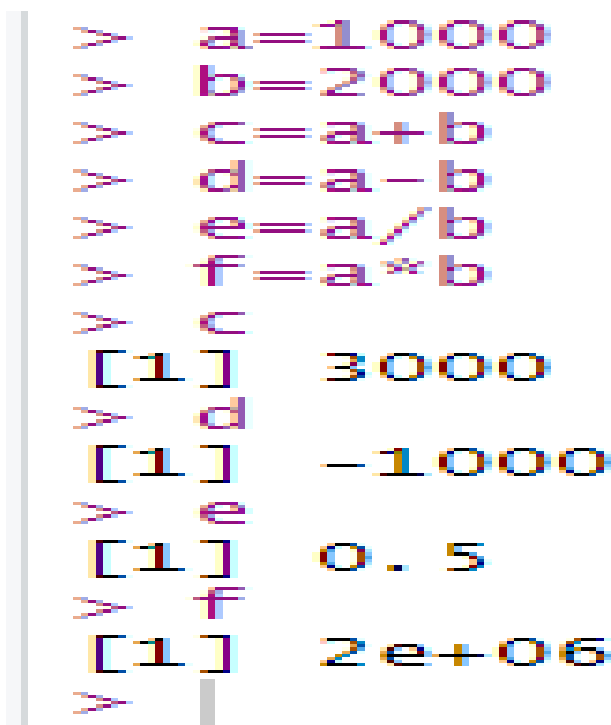
c. Write an R script, to create R objects for calculator application and save in a specified location in disk

Go to file/function   Addins ▾

Untitled1* ×   TESTR.R* ×   Untitled2* ×

Source on Save   Run   Source ▾

```
1   a=1000
2   b=2000
3   c=a+b
4   d=a-b
5   e=a/b
6   f=a*b
7   c
8   d
9   e
10  f
```

```
>  a=1000
>  b=2000
>  c=a+b
>  d=a-b
>  e=a/b
>  f=a*b
>  c
[1]   3000
>  d
[1]  -1000
>  e
[1]   0.5
>  f
[1]   2e+06
>
```

EXP2 -DESCRIPTIVE STATISTICS IN R

a. Write an R script to find basic descriptive statistics using summary, str, quartile function on mtcars& cars datasets.

```
> mtcars
                    mpg cyl  disp  hp drat    wt  qsec vs am
Mazda RX4           21.0   6 160.0 110 3.90 2.620 16.46  0  1
Mazda RX4 Wag       21.0   6 160.0 110 3.90 2.875 17.02  0  1
Datsun 710          22.8   4 108.0  93 3.85 2.320 18.61  1  1
Hornet 4 Drive      21.4   6 258.0 110 3.08 3.215 19.44  1  0
Hornet Sportabout   18.7   8 360.0 175 3.15 3.440 17.02  0  0
Valiant             18.1   6 225.0 105 2.76 3.460 20.22  1  0
Duster 360          14.3   8 360.0 245 3.21 3.570 15.84  0  0
Merc 240D           24.4   4 146.7  62 3.69 3.190 20.00  1  0
Merc 230            22.8   4 140.8  95 3.92 3.150 22.90  1  0
Merc 280            19.2   6 167.6 123 3.92 3.440 18.30  1  0
Merc 280C           17.8   6 167.6 123 3.92 3.440 18.90  1  0
Merc 450SE          16.4   8 275.8 180 3.07 4.070 17.40  0  0
Merc 450SL          17.3   8 275.8 180 3.07 3.730 17.60  0  0
Merc 450SLC         15.2   8 275.8 180 3.07 3.780 18.00  0  0
Cadillac Fleetwood  10.4   8 472.0 205 2.93 5.250 17.98  0  0
Lincoln Continental 10.4   8 460.0 215 3.00 5.424 17.82  0  0
Chrysler Imperial   14.7   8 440.0 230 3.23 5.345 17.42  0  0
Fiat 128            32.4   4  78.7  66 4.08 2.200 19.47  1  1
Honda Civic         30.4   4  75.7  52 4.93 1.615 18.52  1  1
Toyota Corolla      33.9   4  71.1  65 4.22 1.835 19.90  1  1
Toyota Corona       21.5   4 120.1  97 3.70 2.465 20.01  1  0
Dodge Challenger    15.5   8 318.0 150 2.76 3.520 16.87  0  0
AMC Javelin         15.2   8 304.0 150 3.15 3.435 17.30  0  0
Camaro Z28          13.3   8 350.0 245 3.73 3.840 15.41  0  0
Pontiac Firebird    19.2   8 400.0 175 3.08 3.845 17.05  0  0
```

```
Fiat X1-9          27.3   4  79.0  66 4.08 1.935 18.90  1  1
Porsche 914-2      26.0   4 120.3  91 4.43 2.140 16.70  0  1
Lotus Europa       30.4   4  95.1 113 3.77 1.513 16.90  1  1
Ford Pantera L     15.8   8 351.0 264 4.22 3.170 14.50  0  1
Ferrari Dino       19.7   6 145.0 175 3.62 2.770 15.50  0  1
Maserati Bora      15.0   8 301.0 335 3.54 3.570 14.60  0  1
Volvo 142E         21.4   4 121.0 109 4.11 2.780 18.60  1  1
                   gear carb
Mazda RX4             4    4
Mazda RX4 Wag         4    4
Datsun 710            4    1
Hornet 4 Drive        3    1
Hornet Sportabout     3    2
Valiant               3    1
Duster 360            3    4
Merc 240D             4    2
Merc 230              4    2
Merc 280              4    4
Merc 280C             4    4
Merc 450SE            3    3
Merc 450SL            3    3
Merc 450SLC           3    3
Cadillac Fleetwood    3    4
Lincoln Continental   3    4
Chrysler Imperial     3    4
Fiat 128              4    1
Honda Civic           4    2
```

```
> summary(mtcars)
      mpg             cyl             disp
 Min.   :10.40   Min.   :4.000   Min.   : 71.1
 1st Qu.:15.43   1st Qu.:4.000   1st Qu.:120.8
 Median :19.20   Median :6.000   Median :196.3
 Mean   :20.09   Mean   :6.188   Mean   :230.7
 3rd Qu.:22.80   3rd Qu.:8.000   3rd Qu.:326.0
 Max.   :33.90   Max.   :8.000   Max.   :472.0
       hp            drat             wt
 Min.   : 52.0   Min.   :2.760   Min.   :1.513
 1st Qu.: 96.5   1st Qu.:3.080   1st Qu.:2.581
 Median :123.0   Median :3.695   Median :3.325
 Mean   :146.7   Mean   :3.597   Mean   :3.217
 3rd Qu.:180.0   3rd Qu.:3.920   3rd Qu.:3.610
 Max.   :335.0   Max.   :4.930   Max.   :5.424
      qsec             vs              am
 Min.   :14.50   Min.   :0.0000   Min.   :0.0000
 1st Qu.:16.89   1st Qu.:0.0000   1st Qu.:0.0000
 Median :17.71   Median :0.0000   Median :0.0000
 Mean   :17.85   Mean   :0.4375   Mean   :0.4062
 3rd Qu.:18.90   3rd Qu.:1.0000   3rd Qu.:1.0000
 Max.   :22.90   Max.   :1.0000   Max.   :1.0000
      gear            carb
 Min.   :3.000   Min.   :1.000
 1st Qu.:3.000   1st Qu.:2.000
 Median :4.000   Median :2.000
 Mean   :3.688   Mean   :2.812
```

```
> str(mtcars)
'data.frame':   32 obs. of  11 variables:
 $ mpg : num  21 21 22.8 21.4 18.7 18.1 14.3 24.4 22.8 19.2 ...
 $ cyl : num  6 6 4 6 8 6 8 4 4 6 ...
 $ disp: num  160 160 108 258 360 ...
 $ hp  : num  110 110 93 110 175 105 245 62 95 123 ...
 $ drat: num  3.9 3.9 3.85 3.08 3.15 2.76 3.21 3.69 3.92 3.92
...
 $ wt  : num  2.62 2.88 2.32 3.21 3.44 ...
 $ qsec: num  16.5 17 18.6 19.4 17 ...
 $ vs  : num  0 0 1 1 0 1 0 1 1 1 ...
 $ am  : num  1 1 1 0 0 0 0 0 0 0 ...
 $ gear: num  4 4 4 3 3 3 3 4 4 4 ...
 $ carb: num  4 4 1 1 2 1 4 2 2 4 ...
>

> quantile(mtcars$mpg)
    0%     25%     50%     75%    100%
10.400  15.425  19.200  22.800  33.900
>
```

```
> cars
   speed dist
1      4    2
2      4   10
3      7    4
4      7   22
5      8   16
6      9   10
7     10   18
8     10   26
9     10   34
10    11   17
11    11   28
12    12   14
13    12   20
14    12   24
15    12   28
16    13   26
17    13   34
18    13   34
19    13   46
20    14   26
21    14   36
22    14   60
23    14   80
24    15   20
```

```
26      15      54
27      16      32
28      16      40
29      17      32
30      17      40
31      17      50
32      18      42
33      18      56
34      18      76
35      18      84
36      19      36
37      19      46
38      19      68
39      20      32
40      20      48
41      20      52
42      20      56
43      20      64
44      22      66
45      23      54
46      24      70
47      24      92
48      24      93
49      24     120
50      25      85
>
```

```
> summary(cars)
      speed           dist
 Min.   : 4.0    Min.    :  2.00
 1st Qu.:12.0    1st Qu.: 26.00
 Median :15.0    Median : 36.00
 Mean   :15.4    Mean    : 42.98
 3rd Qu.:19.0    3rd Qu.: 56.00
 Max.   :25.0    Max.    :120.00
>
```

```
> summary(cars)
      speed           dist
 Min.   : 4.0    Min.    :  2.00
 1st Qu.:12.0    1st Qu.: 26.00
 Median :15.0    Median : 36.00
 Mean   :15.4    Mean    : 42.98
 3rd Qu.:19.0    3rd Qu.: 56.00
 Max.   :25.0    Max.    :120.00
> class(cars)
[1] "data.frame"
> dim(cars)
[1] 50  2
> quantile(cars$speed)
  0%   25%   50%   75%  100%
   4    12    15    19    25
>
```

b . Write an R script to find subset of dataset by using subset (), aggregate () functions on iris dataset.

```
> subset(iris,iris$Sepal.Length==5.0)
   Sepal.Length Sepal.Width Petal.Length Petal.Width
5             5         3.6          1.4         0.2
8             5         3.4          1.5         0.2
26            5         3.0          1.6         0.2
27            5         3.4          1.6         0.4
36            5         3.2          1.2         0.2
41            5         3.5          1.3         0.3
44            5         3.5          1.6         0.6
50            5         3.3          1.4         0.2
61            5         2.0          3.5         1.0
94            5         2.3          3.3         1.0
      Species
5      setosa
8      setosa
26     setosa
27     setosa
36     setosa
41     setosa
44     setosa
50     setosa
61 versicolor
94 versicolor
> |
```

```
> aggregate(. ~ Species, data = iris, mean)
     Species Sepal.Length Sepal.Width Petal.Length
1      setosa         5.006        3.428         1.462
2 versicolor         5.936        2.770         4.260
3  virginica         6.588        2.974         5.552
  Petal.Width
1        0.246
2        1.326
3        2.026
```