Title: “R Programs”

Date: 8 Feb 2023

Name: K Lalith Aditya

Class: Msc 1st Year

Semester: 2

Regd No: 22231

```
# Add two vectors

v <- c( .2,905.5,996)
t <- c(87, 30, 409)
print(v+t)
```

```
## [1]   87.2  935.5 1405.0
```

Multiply two vectors

```
p<- c(24,25.56,26)
q<- c(30,47,64)
print(p*q)
```

```
## [1]  912.00 1201.32 1664.00
```

Subtract 2nd vector from the first

```
v <- c(1.2,85.5,5.6,45)
t <- c(.8, 7.3, 3.4,99)
print(v-t)
```

```
## [1]   0.4  78.2   2.2 -54.0
```

Divide the first vector with the 2nd vector

```
p<-c(18,51.51,7,6)
q<-c(18,31,41,5)
print(p/q)
```

```
## [1] 1.0000000 1.6616129 0.1707317 1.2000000
```

Remainder of the first vector with the second

```
v <- c( 12,15.5,26,61)
w<- c(0.99, 3.56, 4.999,34)
print(v%%w)
```

```
## [1]  3.010  1.260  1.005 27.000
```

Division of first vector with the second

```
v <- c(12,57,6.87,1)
w<- c(61, 3.99, 4.98,90)
print(v%/%w)
```

```
## [1]  0 14  1  0
```

Colon operator:

```
s <- 1:16
print(s)
```

```
##  [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16
```

%in% operator: This is used to identify an element in the vector

```
a<-5
b<-11
list<-1:10
if(a %in% list){
print("a is present in the list")
}else
{
print("a is not present in the list")
}
```

```
## [1] "a is present in the list"
```

```
if(b %in% list){
print("b is present in the list")
}else
{
print("b is not present in the list")
}
```

```
## [1] "b is not present in the list"
```

%*% This operator is used to multiply a matrix

```
M = matrix(c(2,5,2,0),nrow = 2,ncol = 2,byrow = TRUE)
Msquare = M%*%M
print(Msquare)
```

```
##      [,1] [,2]
## [1,]    4    0
## [2,]    4    0
```

Control Structures

if statement

```
z<- -11
if(is.integer(z)){
  print("Yes z is an integer")
}
```

```
## [1] "Yes z is an integer"
```

if,else if, else statements

```
z<-"str"
if(typeof(z)==typeof("lol")){
{
  print("z is a character")
}else if(typeof(z)==typeof(3)){
{
  print("z is an integer")
}else{
  print("z is neither an integer nor a character")
}
```

```
## [1] "z is a character"
```

Loops

while loops

```
a<-10
while(a>=1){
  print(a)
  a<-a-1
}
```

```
## [1] 10
## [1] 9
## [1] 8
## [1] 7
## [1] 6
## [1] 5
## [1] 4
## [1] 3
## [1] 2
## [1] 1
```

Repeat Loop

```
count<-0
repeat{
  count<-count+1
  if(count==10){
    print("count is 10")
    break
  }
}
```

```
## [1] "count is 10"
```

R For Loop

```
x<- 10:12
for(v in x){
  print(v)
}
```

```
## [1] 10
## [1] 11
## [1] 12
```

```
v <- letters[1:4]
print(v)
```

```
## [1] "a" "b" "c" "d"
```

```
for(z in v)
{
  print(z)
}
```

```
## [1] "a"
## [1] "b"
## [1] "c"
## [1] "d"
```

next and break statement

```
elements<-list("a","b","c","d","e","f")
for(i in elements){
  if(i == "b"){
    next
  }
  if(i == "f"){
    break
  }
  print(i)
}
```

```
## [1] "a"
## [1] "c"
## [1] "d"
## [1] "e"
```

```
mtcars
```

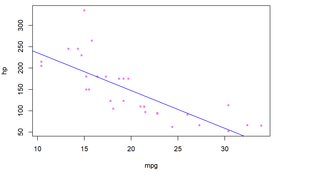
```
##                     mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4          21.0   6 160.0 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag      21.0   6 160.0 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710         22.8   4 108.0  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive     21.4   6 258.0 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout  18.7   8 360.0 175 3.15 3.440 17.02  0  0    3    2
## Valiant            18.1   6 225.0 105 2.76 3.460 20.22  1  0    3    1
## Duster 360         14.3   8 360.0 245 3.21 3.570 15.84  0  0    3    4
## Merc 240D          24.4   4 146.7  62 3.69 3.190 20.00  1  0    4    2
## Merc 230           22.8   4 140.8  95 3.92 3.150 22.90  1  0    4    2
## Merc 280           19.2   6 167.6 123 3.92 3.440 18.30  1  0    4    4
## Merc 280C          17.8   6 167.6 123 3.92 3.440 18.90  1  0    4    4
## Merc 450SE         16.4   8 275.8 180 3.07 4.070 17.40  0  0    3    3
## Merc 450SL         17.3   8 275.8 180 3.07 3.730 17.60  0  0    3    3
## Merc 450SLC        15.2   8 275.8 180 3.07 3.780 18.00  0  0    3    3
## Cadillac Fleetwood 10.4   8 472.0 205 2.93 5.250 17.98  0  0    3    4
## Lincoln Continental 10.4  8 460.0 215 3.00 5.424 17.82  0  0    3    4
## Chrysler Imperial  14.7   8 440.0 230 3.23 5.345 17.42  0  0    3    4
## Fiat 128           32.4   4  78.7  66 4.08 2.200 19.47  1  1    4    1
## Honda Civic        30.4   4  75.7  52 4.93 1.615 18.52  1  1    4    2
## Toyota Corolla     33.9   4  71.1  65 4.22 1.835 19.90  1  1    4    1
## Toyota Corona      21.5   4 120.1  97 3.70 2.465 20.01  1  0    3    1
## Dodge Challenger   15.5   8 318.0 150 2.76 3.520 16.87  0  0    3    2
## AMC Javelin        15.2   8 304.0 150 3.15 3.435 17.30  0  0    3    2
## Camaro Z28         13.3   8 350.0 245 3.73 3.840 15.41  0  0    3    4
## Pontiac Firebird   19.2   8 400.0 175 3.08 3.845 17.05  0  0    3    2
## Fiat X1-9          27.3   4  79.0  66 4.08 1.935 18.90  1  1    4    1
## Porsche 914-2      26.0   4 120.3  91 4.43 2.140 16.70  0  1    5    2
## Lotus Europa       30.4   4  95.1 113 3.77 1.513 16.90  1  1    5    2
## Ford Pantera L     15.8   8 351.0 264 4.22 3.170 14.50  0  1    5    4
## Ferrari Dino       19.7   6 145.0 175 3.62 2.770 15.50  0  1    5    6
## Maserati Bora      15.0   8 301.0 335 3.54 3.570 14.60  0  1    5    8
## Volvo 142E         21.4   4 121.0 109 4.11 2.780 18.60  1  1    4    2
```

```
head(mtcars)
```

```
##                   mpg cyl disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4        21.0   6  160 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag    21.0   6  160 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710       22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive   21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout 18.7  8  360 175 3.15 3.440 17.02  0  0    3    2
## Valiant          18.1   6  225 105 2.76 3.460 20.22  1  0    3    1
```

scatter plot mpg(mileage) Vs hp(horse power)

```
plot(mtcars$mpg, mtcars$hp,
     col='violet',
     main='Scatterplot',
     xlab='mpg',
     ylab='hp',
     pch=20)
abline(lm(mtcars$hp ~ mtcars$mpg, data = mtcars), col = "blue")
```




```
corr<-cor(mtcars$mpg, mtcars$hp)
sprintf("The co-relation between the features is %f",corr)
```

```
## [1] "The co-relation between the features is -0.776168"
```