

Title: R Programs

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## Vectors

```
abd<-c("hello","world")
print(abd)
```

```
## [1] "hello" "world"
```

## concatenating two vectors

```
xa<-c('sai')
xb<-c('ram')
cat(xa,xb)
```

```
## sai ram
```

## Operations on vectors

```
#adding corresponding elements in two vectors
a<-c(1,2,3)
b<-c(4,5,6)
c<-a+b
print(c)
```

```
## [1] 5 7 9
```

## class

```
#class of c
print(class(c))
```

```
## [1] "numeric"
```

## Multiplication

```
#multiplying corresponding elements in two vectors
a<-c(1,2,3)
b<-c(4,5,6)
c<-a*b
c
```

```
## [1] 4 10 18
```

## Subtraction

```
#subtracting corresponding elements in two vectors
a<-c(1,2,3)
b<-c(4,5,6)
c<-a-b
c
```

```
## [1] -3 -3 -3
```

## Division

```
#dividing corresponding elements in two vectors
a<-c(1,2,3)
b<-c(4,5,6)
c<-a/b
c
```

```
## [1] 0.25 0.40 0.50
```

## Lists

```
mysub<-list(c("regression","multivariate","machine learning","big data","data engineering"))
print(mysub)
```

```
## [[1]]
## [1] "regression"      "multivariate"      "machine learning"  "big data"
## [5] "data engineering"
```

```
print(class(mysub))
```

```
## [1] "list"
```

## Appending two lists

```
a<-list(1,2,3)
b<-list(5,6,7)
z<-append(a,b)
z
```

```
## [[1]]
## [1] 1
## [[2]]
## [1] 2
## [[3]]
## [1] 3
## [[4]]
## [1] 5
## [[5]]
## [1] 6
## [[6]]
## [1] 7
```

## Matrices

```
#Creating a Matrix of class seating
bench<-matrix(c('aditya','kumar reddy','satya sai','vamsee','hemanth','lalith','pavan','mathura','saideva','varan
asi','aharneish','anirudh','srihari','swaroop'),nrow=2,ncol = 7,byrow=TRUE)
print(bench)
```

```
##      [,1]      [,2]      [,3]      [,4]      [,5]      [,6]
## [1,] "aditya"  "kumar reddy" "satya sai" "vamsee"    "hemanth"  "lalith"
## [2,] "mathura" "saideva"    "varanasi" "aharneish" "anirudh"  "srihari"
```

```
## [1,] "pavan"
## [2,] "swaroop"
```

## Taking by row = False or default taking as by column

```
bench<-matrix(c('aditya','kumar reddy','satya sai','vamsee','hemanth','lalith','pavan','mathura','saideva','varan
asi','aharneish','anirudh','srihari','swaroop'),nrow=2,ncol = 7,byrow = FALSE)
print(bench)
```

```
##      [,1]      [,2]      [,3]      [,4]      [,5]      [,6]
## [1,] "aditya"    "satya sai" "hemanth"  "pavan"    "saideva"   "aharneish"
## [2,] "kumar reddy" "vamsee"    "lalith"   "mathura"  "varanasi"  "anirudh"
```

```
## [1,] "srihari"
## [2,] "swaroop"
```

## Arrays

```
#printing array elements
a <- array(c("o","x"),dim=c(1,2))
i<-0
```

```
while(i<=5){
  print(a)
  i<-i+1
}
```

```
##      [,1] [,2]
## [1,] "o"  "x"
##      [,1] [,2]
## [1,] "o"  "x"
##      [,1] [,2]
## [1,] "o"  "x"
##      [,1] [,2]
## [1,] "o"  "x"
##      [,1] [,2]
## [1,] "o"  "x"
```

## Factors

```
#Taking Cars types
```

```
cars<-c('tata','suzuki','maruti','suzuki','tata','benz','toyota')
factor_cars<- factor(cars)
```

```
print(factor_cars)
```

```
## [1] tata   suzuki  maruti  suzuki  tata    benz    toyota
## Levels: benz maruti suzuki tata toyota
```

```
print(" ")
```

```
## [1] " "
```

```
print(class(factor_cars))
```

```
## [1] "factor"
```

```
print(nlevels(factor_cars))
```

```
## [1] 5
```

## DataFrames

```
sports_perf<-data.frame(
  name=c('aditya','kumar','satya','vamsee','hemanth'),
  height_cm=c(170,169,175,169.5,173),
  weight_kg=c(75,89,66,89,77),
  age_yrs=c(22,21,22,21,22),
  hund_mtr_sec=c(12,9,10,14,13),
  four_hundr_sec=c(40,37,42,39,36)
)
print(sports_perf)
```

```
##      name height_cm weight_kg age_yrs hund_mtr_sec four_hundr_sec
## 1  aditya    170.0      75      22      12          40
## 2   kumar    169.0      89      21       9          37
## 3   satya    175.0      66      22     10          42
## 4  vamsee    169.5      89      21     14          39
## 5 hemanth    173.0      77      22     13          36
```

## To know what all variables are present

```
ls()
```

```
## [1] "a"      "abd"      "b"      "bench"    "c"
## [6] "cars"    "factor_cars" "i"      "mysub"    "sports_perf"
## [11] "xa"      "xb"      "z"
```

## Deleting Variables

```
print("Before Deleting:")
```

```
## [1] "Before Deleting:"
```

```
new_var<- 'I am new Variable'
ls()
```

```
## [1] "a"      "abd"      "b"      "bench"    "c"
## [6] "cars"    "factor_cars" "i"      "mysub"    "new_var"
## [11] "sports_perf" "xa"      "xb"      "z"
```

```
print("After Deleting:")
```

```
## [1] "After Deleting:"
```

```
rm(new_var)
ls()
```

```
## [1] "a"      "abd"      "b"      "bench"    "c"
## [6] "cars"    "factor_cars" "i"      "mysub"    "sports_perf"
## [11] "xa"      "xb"      "z"
```

## In the above code the variable new\_var got deleted

## Basic Arithmetic Operations

```
a<-2
b<-3
```

```
sprintf("Add:- %d",a+b)
```

```
## [1] "Add:- 5"
```

```
sprintf("Sub:- %d",a-b)
```

```
## [1] "Sub:- -1"
```

```
sprintf("Mul:- %d",a*b)
```

```
## [1] "Mul:- 6"
```

```
sprintf("div:- %f",b/a)
```

```
## [1] "div:- 1.500000"
```

```
sprintf("power:- %d",a^b)
```

```
## [1] "power:- 8"
```

```
sprintf("modulus:- %d",a%%b)
```

```
## [1] "modulus:- 2"
```

```
sprintf("Integer Division:- %d",a%/%b)
```

```
## [1] "Integer Division:- 0"
```

## Comparison Operations

### Equality condition

```
a<-6
b<-6
if(a==b){
  print("both variables are equal")
}else{
  print("both variables are not equal")
}
```

```
## [1] "both variables are equal"
```

### Not Equal

```
a<-7
b<-6
if(a!=b){
  print("both variables are not equal")
}else{
  print("both variables are equal")
}
```

```
## [1] "both variables are not equal"
```

```
a<-6
b<-7
```

```
if(a>=6){
  print(a)
}
```

```
## [1] 6
```

```
if(a<b){
  print("b is less than a")
}
```

```
## [1] "b is less than a"
```

```
if(b>=7){
  print(TRUE)
}
```

```
## [1] TRUE
```