title: “R Programs” Date: 4 Feb 2023 Name: K Lalith Aditya Class: Msc 1st Year Semester: 2 Regd No: 22231

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

```r
#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

```r
#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

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

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

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

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

Appending two lists

```r
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','saide
print(bench)
```

```
##      [,1]      [,2]          [,3]        [,4]        [,5]      [,6]
## [1,] "aditya"  "kumar reddy" "satya sai" "vamsee"    "hemanth" "lalith"
## [2,] "mathura" "saideva"     "varanasi"  "aharneish" "anirudh" "srihari"
##      [,7]
## [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','saide
print(bench)
```

```
##      [,1]          [,2]        [,3]      [,4]      [,5]       [,6]
## [1,] "aditya"      "satya sai" "hemanth" "pavan"   "saideva"  "aharneish"
## [2,] "kumar reddy" "vamsee"    "lalith"  "mathura" "varanasi" "anirudh"
##      [,7]
## [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"
##      [,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"
```

```r
a<-6
b<-7
if(a>=6){
  print(a)
}
```

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

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

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

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

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