

Department of Information Technology

Practical File

Subject : Statistical Computing Techniques using R

[BTES 502-20]

B.Tech – V

Semester [Batch

2022-2026]



Chandigarh Engineering College- CGC Landran,
Mohali-140307

Submitted to:

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AI&ML (D2)

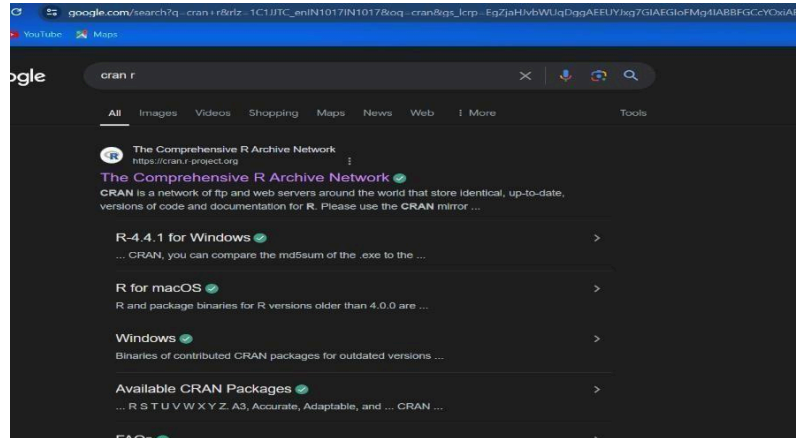
Experiment-

1 Aim: To install R and R studio in the windows.

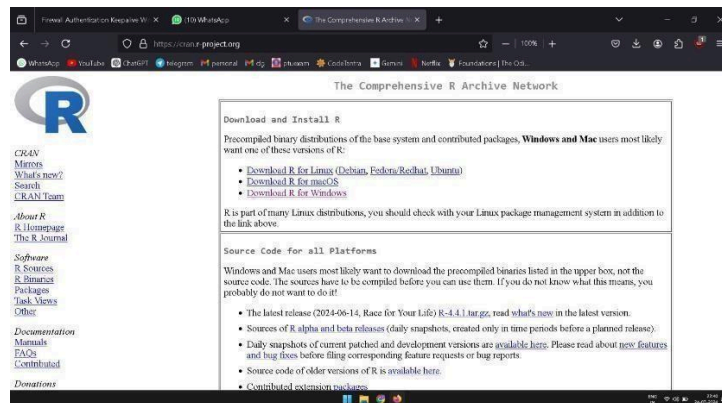
Theory:

Installation of R:

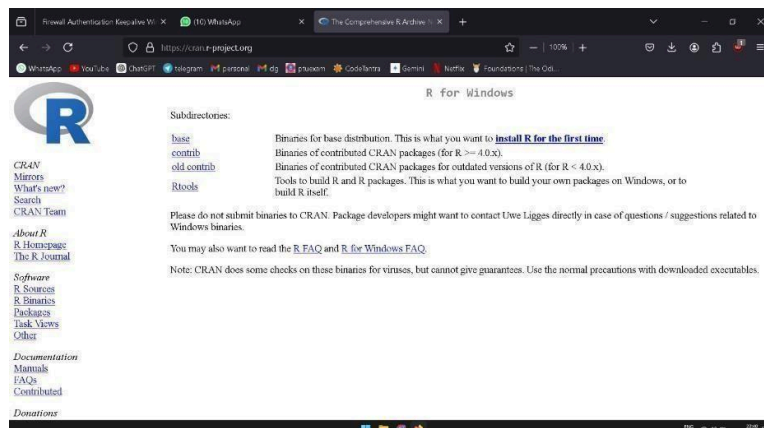
Step 1: Search CRAN on any search browser.



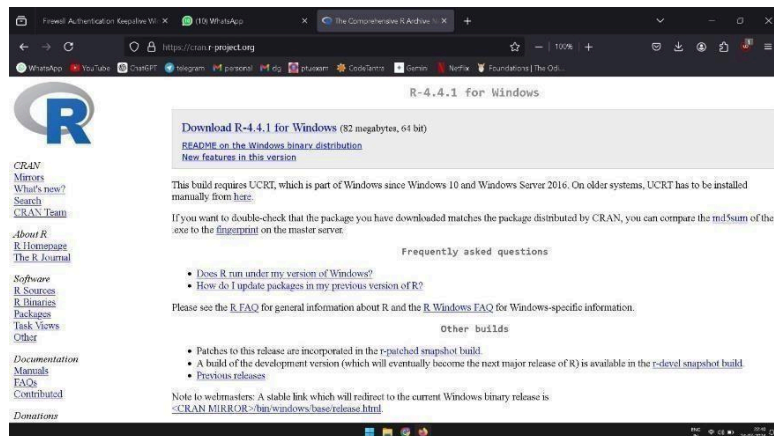
Step 2: Download R for windows.



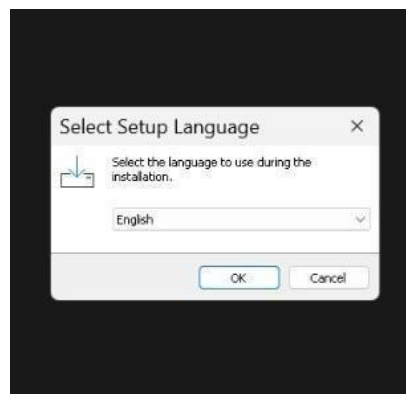
Step 3: Install



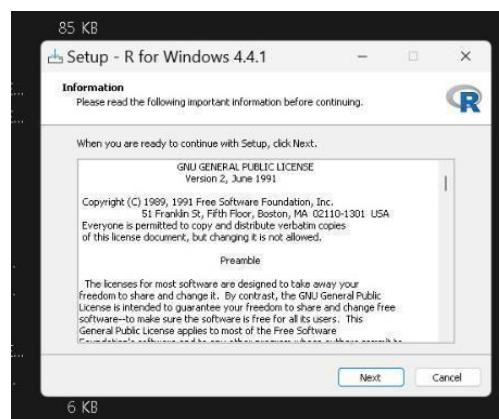
Step 4: Download the version



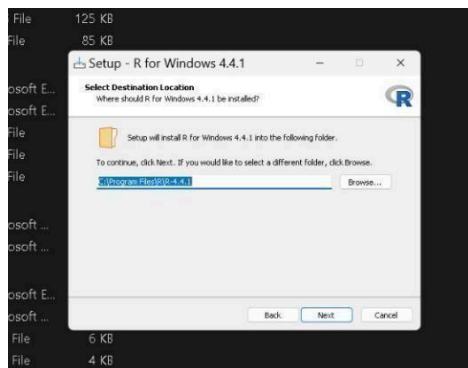
Step 5: Setup language



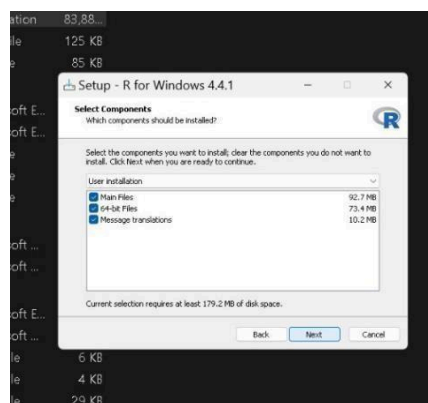
Step 6: Information



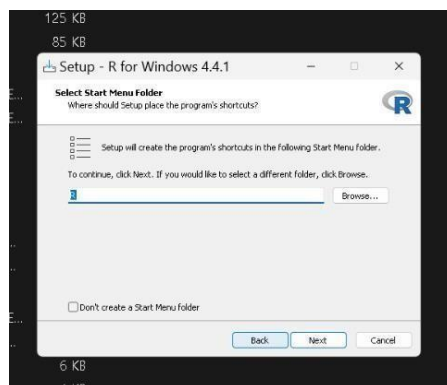
Step 7: Setup – R



Step 8:



Step 9:



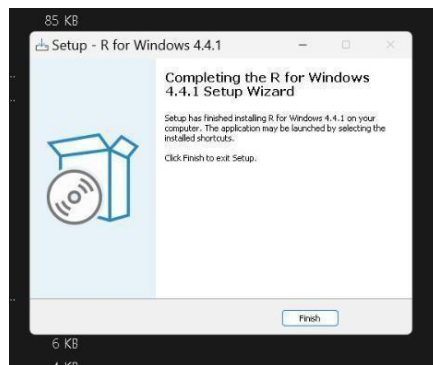
Step 10:



Step 11: Installing



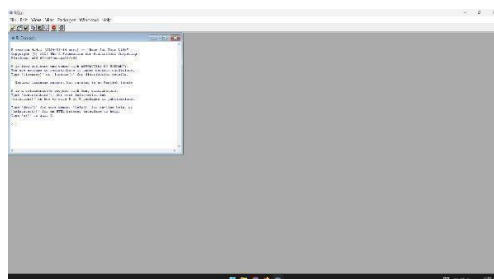
Step 12:



Step 13: R download in desktop.

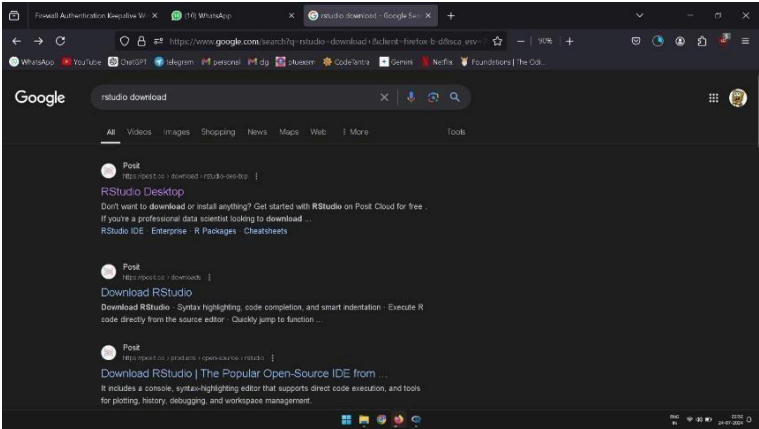


Step 14:

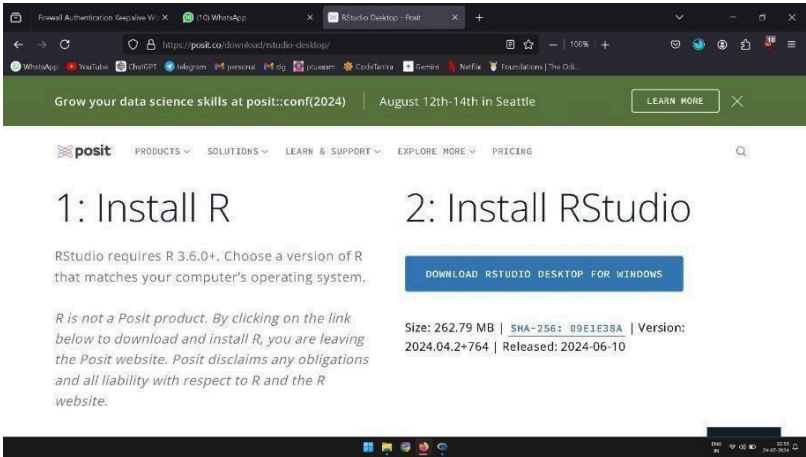


Installation of R studio:

Step 1: Search R studio in any search browser.



Step2: Install RStudio



Step 3: Setup of RStudio



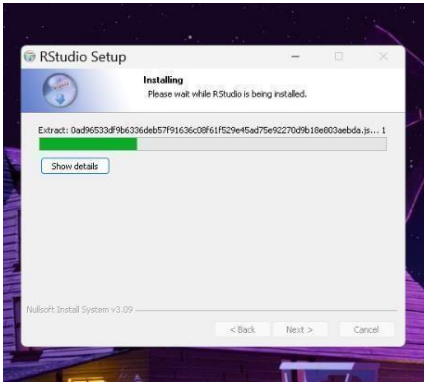
Step 4:



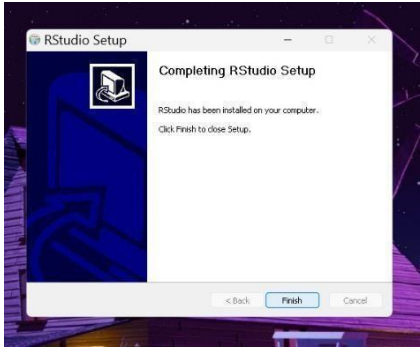
Step 5:



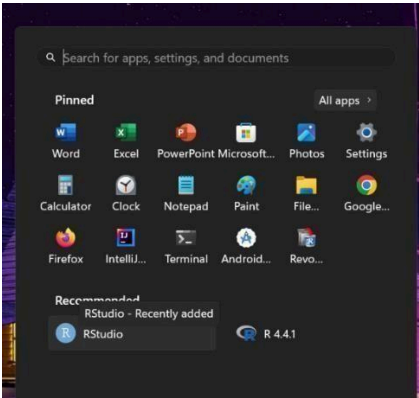
Step 6: Installing



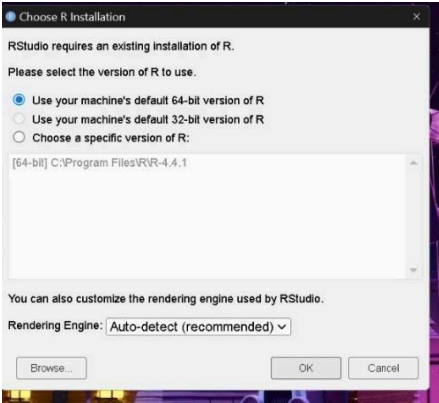
Step 7: Complete the Setup



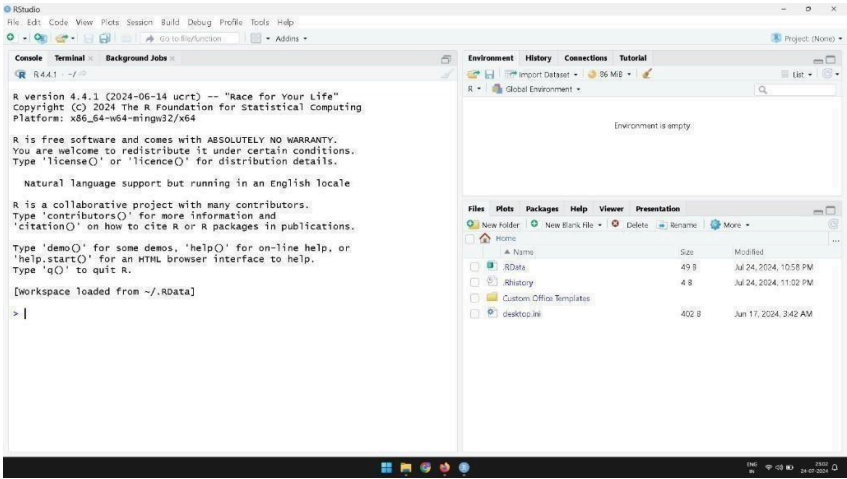
Step 8:



Step 9:



Step 10:



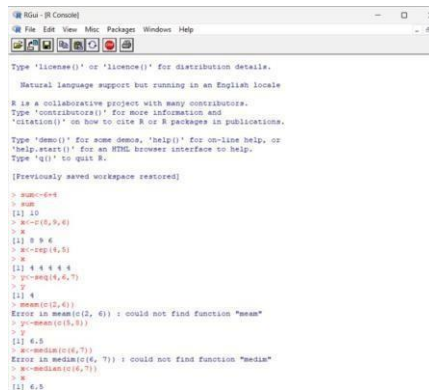
Experiment-2

Aim: Write Basic R commands.

Theory:

- **sum()**: Add up all values in a vector.
- **c(), scan()**: Enter data manually to a vector in R.
- **rep()**: Make vector of repeated values.
- **seq()**: Make vector of repeated values.
- **mean(), median()**: Identify “centre” of distribution.

Outputs:



```
RGui - R Console
Type 'license()' or 'licence()' for distribution details.
Natural language support but running in an English locale
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[Previously saved workspace restored]

> sum<-6+4
> sum
[1] 10
> c<-c(5,5,6)
> c
[1] 5 5 6
> c<-seq(4,5)
> c
[1] 4 4 4 4 4
> c<-seq(4,6,7)
> c
[1] 4
> mean(c(2,4))
Error in mean(c(2, 4)) : could not find function "mean"
> p<-mean(c(1,3))
> p
[1] 2
> c<-median(c(6,7))
Error in median(c(6, 7)) : could not find function "median"
> m<-median(c(6,7))
> m
[1] 6.5
```

Program:

```
x<-23
class(x)

x<-9i+3
class(x)

x<-TRUE
class(x)

x<-100L
class(x)

x<-"Ris
exiting" class(x)

x<-1L
a<-as.numeric(x
) a
class(a)
class(x
)

max(3,1,8)
```

```
min(4,6,5)
sqrt(3)
abs(4)
ceiling(1.3
) floor(4.4)
```

```
plot(1:10)
plot(1:10, main="My Graph", xlab ="the x axis",ylab = "the y axis")
```

```
str<-"Hello
world" nchar(str)
```

```
str<-"Hello
varsha"
grepl("v",str)
grepl("Shivani",str
)
```

```
str1<-"Hello"
str2<-"Varsha"
paste(str1,str2
)
```

```
fruits<-c("apple","mango","kiwi"
) print (fruits)
length(fruits)
```

```
numbers<-1:
6 numbers
```

```
decimals<-1.5:6.
4 decimals
```

```
fruits<-c("apple","mango","kiwi"
) sort(fruits)
```

```
fruits<-c("apple","mango","kiwi"
) fruits[2]
```

```
fruits<-c("apple","mango","kiwi","banana"
) fruits[c(1,3)]
fruits[c(-4)]
```

```
repeat_each<-rep(c(1,2,3),each =
3) repeat_each
```

```
repeat_times<-rep(c(1,2,3),times =
3) repeat_times
```

```
numbers<-seq(from=0,to=100,by=20
) numbers
```

```
thislist<-list("apple","orange","mango"
) thislist<-"cherry"
thislist
```

```
thislist<-list("apple","orange","mango"
) length(thislist)
```

```
thislist<-list("apple","orange","mango"
) "apple"%in% thislist
"kiwi"%in% thislist
thislist<-list("apple","orange","mango") append(thislist,"kiwi",after=2)
```

```
thislist<-list(2,1,5,4,8,6,9
) thislist[2:5]
```

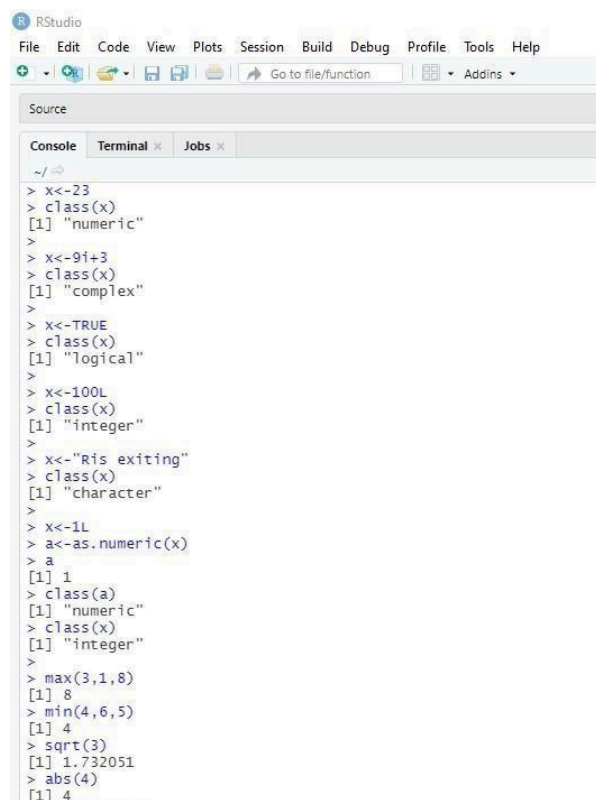
```
thislist<-list(8,6,9)
newlist<-thislist[-2
] newlist
```

```
thislist<-list("apple","kiwi","orange"
) for(x in thislist){
print(x)
}
```

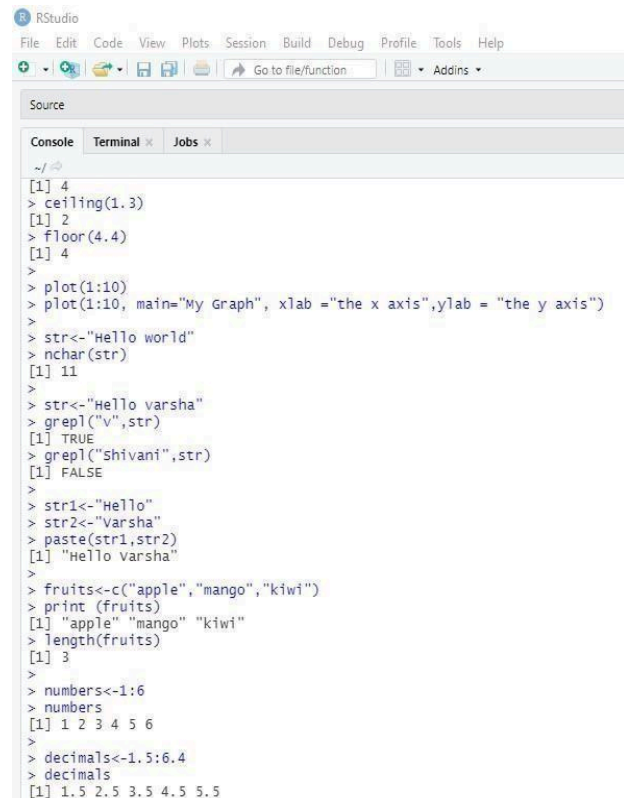
```
i<-1
while(i<6)
{ print(i)
i<-i+1
}
```

```
i<-1
while(i<6)
{ print(i)
i<-i+1
if(i==4)
{ break
}
}
```

Output:



```
RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
Console Terminal x Jobs x
~/
> x<-23
> class(x)
[1] "numeric"
>
> x<-9i+3
> class(x)
[1] "complex"
>
> x<-TRUE
> class(x)
[1] "logical"
>
> x<-100L
> class(x)
[1] "integer"
>
> x<- "Ris exiting"
> class(x)
[1] "character"
>
> x<-1L
> a<-as.numeric(x)
> a
[1] 1
> class(a)
[1] "numeric"
> class(x)
[1] "integer"
>
> max(3,1,8)
[1] 8
> min(4,6,5)
[1] 4
> sqrt(3)
[1] 1.732051
> abs(4)
[1] 4
```



```
RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
Console Terminal x Jobs x
~/
> [1] 4
> ceiling(1.3)
[1] 2
> floor(4.4)
[1] 4
>
> plot(1:10)
> plot(1:10, main="My Graph", xlab = "the x axis",ylab = "the y axis")
>
> str<-"Hello world"
> nchar(str)
[1] 11
>
> str<-"Hello varsha"
> grepl("v",str)
[1] TRUE
> grepl("shivani",str)
[1] FALSE
>
> str1<-"Hello"
> str2<-"Varsha"
> paste(str1,str2)
[1] "Hello Varsha"
>
> fruits<-c("apple","mango","kiwi")
> print (fruits)
[1] "apple" "mango" "kiwi"
> length(fruits)
[1] 3
>
> numbers<-1:6
> numbers
[1] 1 2 3 4 5 6
>
> decimals<-1.5:6.4
> decimals
[1] 1.5 2.5 3.5 4.5 5.5
```

```

RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
Console Terminal Jobs x
~/
> fruits<-c("apple", "mango", "kiwi")
> sort(fruits)
[1] "apple" "kiwi" "mango"
>
> fruits<-c("apple", "mango", "kiwi")
> fruits[2]
[1] "mango"
>
> fruits<-c("apple", "mango", "kiwi", "banana")
> fruits[c(1,3)]
[1] "apple" "kiwi"
> fruits[c(-4)]
[1] "apple" "mango" "kiwi"
>
> repeat_each<-rep(c(1,2,3),each = 3)
> repeat_each
[1] 1 1 1 2 2 2 3 3 3
>
> repeat_times<-rep(c(1,2,3),times = 3)
> repeat_times
[1] 1 2 3 1 2 3 1 2 3
>
> numbers<-seq(from=0,to=100,by=20)
> numbers
[1] 0 20 40 60 80 100
>
> thislist<-list("apple", "orange", "mango")
> thislist<- "cherry"
> thislist
[1] "cherry"
>
> thislist<-list("apple", "orange", "mango")
> length(thislist)
[1] 3
>
> thislist<-list("apple", "orange", "mango")
> "apple"%in% thislist
[1] TRUE

```

```

RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
Console Terminal Jobs x
~/
> "kiwi"%in% thislist
[1] FALSE
>
> thislist<-list("apple", "orange", "mango")
> append(thislist, "kiwi", after=2)
[[1]]
[1] "apple"

[[2]]
[1] "orange"

[[3]]
[1] "kiwi"

[[4]]
[1] "mango"

>
> thislist<-list(2,1,5,4,8,6,9)
> thislist[2:5]
[[1]]
[1] 1

[[2]]
[1] 5

[[3]]
[1] 4

[[4]]
[1] 8

>
> thislist<-list(8,6,9)
> newlist<-thislist[-2]
> newlist
[[1]]
[1] 8

```

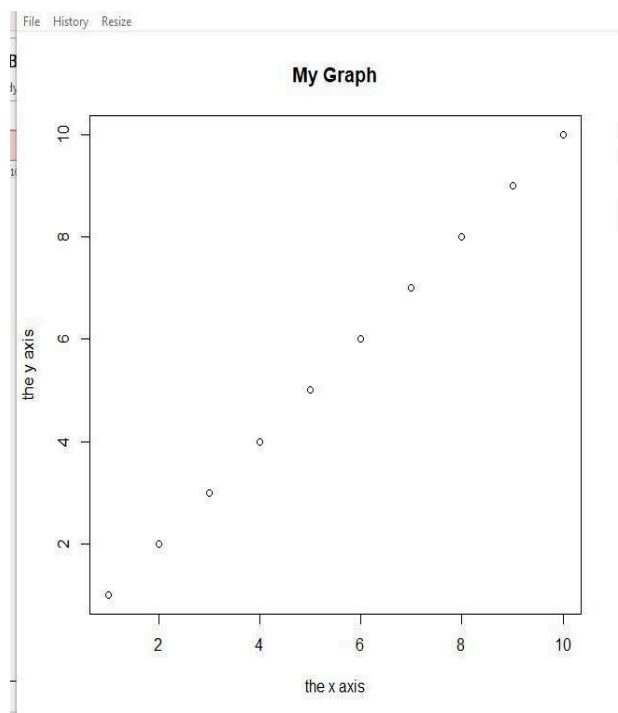
```

RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
Console Terminal Jobs x
~/
[1] 8

[[2]]
[1] 9

>
> thislist<-list("apple", "kiwi", "orange")
> for(x in thislist){
+   print(x)
+ }
[1] "apple"
[1] "kiwi"
[1] "orange"
>
> i<-1
> while(i<6){
+   print(i)
+   i<-i+1
+ }
[1] 1
[1] 2
[1] 3
[1] 4
[1] 5
>
> i<-1
> while(i<6){
+   print(i)
+   i<-i+1
+   if(i==4){
+     break
+   }
+ }
[1] 1
[1] 2
[1] 3
>

```



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AI&ML (D2)

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