## Atomic Vector:-

**Numeric vector: -**

```
num_vec<-c(10.1, 10.2, 33.2)
num_vec
```

**Integer vector: -**

```
num<-c(2L,6L,4L,9L)
num
```

**Character vector: -**

```
fruits<-c("Mango","apple","papaya")
print(fruits)
```

**Logical vector: -**

```
a<-as.integer(20)
b<-as.integer(10)
log_vec<-c(a<b,b<a,a>b,b>a)
log_vec
```

**Operations on Vector: -**

1)combining vectors:

```
data_vec<-c(names,num)
data_vec
```

2)Arithmetic operations:

```
a<-c(1,3,5,7)
b<-c(2,4,6,8)
a+b
a-b
a*b
a/b
```

3)Logical Index vector:

```
z<-c(1,2,3,4,5,6)
z[c(TRUE,FALSE,TRUE,TRUE,FALSE,TRUE)]
```

4)Numeric Index: -

```
q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")
q[2]
q[-4]
q[15]
```

5)Duplicate Index: -

```
q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")
q[c(2,4,4,3)]
```

6)Range Indexes: -

```
 q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")
 b<-q[2:5]
 b

7)out-of-order Indexes: -
 q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")
 q[c(2,1,3,4,5,6)]

8)Named vectors members: -
 z=c("Roshani","Kawale")
 z
 names(z)=c("FirstName","LastName")
 z
 z["FirstName"]
```

---

**OUTPUT: -**

```
 > #Numeric vector: -
>   num_vec<-c(10.1, 10.2, 33.2)
>   num_vec
[1] 10.1 10.2 33.2
>
> #Integer vector: -
>   num<-c(2L,6L,4L,9L)
>   num
[1] 2 6 4 9
>
> #Character vector: -
>   fruits<-c("Mango","apple","papaya")
>   print(fruits)
[1] "Mango"  "apple"  "papaya"
>
> #Logical vector: -
>   a<-as.integer(20)
>   b<-as.integer(10)
>   log_vec<-c(a<b,b<a,a>b,b>a)
>   log_vec
[1] FALSE  TRUE  TRUE FALSE
>
> #Operations on Vector: -
> #1)combining vectors:
>   data_vec<-c(names,num)
>   data_vec
[[1]]
function (x)  .Primitive("names")

[[2]]
[1] 2
```

```
[[3]]
[1] 6

[[4]]
[1] 4

[[5]]
[1] 9

>
> #2)Arithmetic operations:
>   a<-c(1,3,5,7)
>   b<-c(2,4,6,8)
>   a+b
[1]  3  7 11 15
>   a-b
[1] -1 -1 -1 -1
>   a*b
[1]  2 12 30 56
>   a/b
[1] 0.5000000 0.7500000 0.8333333 0.8750000
>
> #3)Logical Index vector:
>   z<-c(1,2,3,4,5,6)
>   z[c(TRUE,FALSE,TRUE,TRUE,FALSE,TRUE)]
[1] 1 3 4 6
>
>
> #4)Numeric Index: -
>   q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")
>   q[2]
[1] "arpita"
>   q[-4]
[1] "shubham"  "arpita"   "nishka"   "vaishali" "sumit"
>   q[15]
[1] NA
>
> #5)Duplicate Index: -
>   q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")
>   q[c(2,4,4,3)]
[1] "arpita" "gunjan" "gunjan" "nishka"
>
> #6)Range Indexes: -
>   q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")
>   b<-q[2:5]
>   b
```

```
[1] "arpita"   "nishka"   "gunjan"   "vaishali"
>
> #7)out-of-order Indexes: -
>   q<-c("shubham","arpita","nishka","gunjan","vaishali","sumit")
>   q[c(2,1,3,4,5,6)]
[1] "arpita"   "shubham"  "nishka"   "gunjan"   "vaishali" "sumit"
>
> #8)Named vectors members: -
>   z=c("Roshani","Kawale")
>   z
[1] "Roshani" "Kawale"
>   names(z)=c("FirstName","LastName")
>   z
FirstName  LastName
"Roshani"  "Kawale"
>   z["FirstName"]
FirstName
"Roshani"
>
```