TMC 204
Statistical Data Analysis with R
Unit 4
Manipulating Objects

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Manipulating Objects

Data objects are the fundamental items that you work in R

When you collect data the following steps are to be performed:

1. To get the data into R
2. To look at your data
3. Reorder the data
4. Perform summary statistics and other analysis to them

Manipulating Vectors

The main ways you can manipulate vectors are the following

- Selecting and displaying certain parts
- Sorting and rearranging
- Returning logical values

Selecting and Displaying Parts of a vector

Here is a simple vectors of numbers

```
> data1<-c(3,5,7,5,3,2,6,8,5,6,9)
> data1
 [1] 3 5 7 5 3 2 6 8 5 6 9
```

Command	Result
data1[1]	Shows the first item in the vector
data1[3]	Shows the Third Item
data1[1:3]	Shows the first to the third Items
data1[-1]	Shows all except the first Item
data1[c(1,3,4,8)]	Shows the item listed in C() part
data1[data1>3]	Shows the item greater than 3
data1[data1<5|data1>7]	Shows items less than 5 or greater than 7

```
> data1<-c(3,5,7,5,3,2,6,8,5,6,9)
> data1
 [1] 3 5 7 5 3 2 6 8 5 6 9
> data1[1]
[1] 3
> data1[3]
[1] 7
> data1[1:3]
[1] 3 5 7
> data1[-1]
 [1] 5 7 5 3 2 6 8 5 6 9
> data1[c(1,3,4,8)]
[1] 3 7 5 8
> data1[data1>3]
[1] 5 7 5 6 8 5 6 9
> data1[data1<5|data1>7]
[1] 3 3 2 8 9
```

```
> length(data1)
[1] 11
```
How many elements are there is a vector

```
> data1[(length(data1)-5):length(data1)]
[1] 2 6 8 5 6 9
```
This shows last 6 elements

```
> max(data1)
[1] 9
```
This gives the actual value i.e. largest numerical value in the vector

```
> which(data1==max(data1))
[1] 11
```
This tells which of the elements is the largest i.e the 11^{th} element is largest

```
> data1[seq(1,length(data1),2)]
[1] 3 7 3 6 5 9
```
It pick the sequence from the first ending with the last with an interval of two

The common form of seq() command is
seq(start, end, interval)

These command will work on character vector just as numeric

```
> data2<-month.name
> data2
 [1] "January"   "February"  "March"     "April"     "May"
 [6] "June"      "July"      "August"    "September" "October"
[11] "November"  "December"
> data2[-1:-6]
[1] "July"      "August"    "September" "October"   "November"
[6] "December"
> which(data2==max(data2))
[1] 9
```
The item is sorted alphabetically and biggest is September

Sorting and Rearranging a vector > data3<-c(8,9,7,9,NA)

> sort(data3) [1] 7 8 9 9	Sort in increasing order
> sort(data3,decreasing = TRUE) [1] 9 9 8 7	Sort data in decreasing order
> sort(data3,na.last = NA) [1] 7 8 9 9	NA is dropped in sorting
> sort(data3,na.last = TRUE) [1] 7 8 9 9 NA	NA is Placed Last
> sort(data3,na.last = FALSE) [1] NA 7 8 9 9	NA is Placed at first
> order(data3) [1] 3 1 2 4 5	We can get the index with the help of order it tells you the position of each item along the vector
> order(data3,na.last = NA) [1] 3 1 2 4 > order(data3,na.last = FALSE) [1] 5 3 1 2 4	

Sources : Beginning R Dr. Mark Gardner