Melting and Casting in R:

One of the most interesting aspects of R programming is about changing the shape of the data to get a desired shape.Melting and casting in R, are the functions that can be used efficiently to reshape the data. The functions used to do this are called **melt()** and **cast()**.

Melt Function in R:

The melt function is used to convert data from wide format to long format. It is in reshape 2 package .We will use the inbuilt data in R to understand how melt and cast function works.

```
1    library(MASS)
2    library(reshape2)
3    library(reshape)
4    print(head(ships,n=10))
```

This will print first 10 values of the inbuilt ships data

	type	year	period	service	incidents
1	A	60	60	127	0
2	A	60	75	63	0
3	A	65	60	1095	3
4	A	65	75	1095	4
5	A	70	60	1512	6
6	A	70	75	3353	18
7	A	75	60	0	0
8	A	75	75	2244	11
9	B	60	60	44882	39
10	B	60	75	17176	29

Now lets keep type and year as constant(id variable) and melt (stack) the other three variables namely period, service and incidents.

```
1    shipdata<-(head(ships,n=10))
2    molten.ships <- melt(shipdata, id = c("type","year"))
3    print(molten.ships)
```

As the result **type** and **year** column are kept constant. Columns named period, service and incidents are stacked under the column named **variable** and their values are stacked under the column named **value.** The result of melt function is shown below

	type	year	variable	value
1	A	60	period	60
2	A	60	period	75
3	A	65	period	60
4	A	65	period	75
5	A	70	period	60
6	A	70	period	75
7	A	75	period	60
8	A	75	period	75
9	B	60	period	60
10	B	60	period	75
11	A	60	service	127
12	A	60	service	63
13	A	65	service	1095
14	A	65	service	1095
15	A	70	service	1512
16	A	70	service	3353
17	A	75	service	0
18	A	75	service	2244
19	B	60	service	44882
20	B	60	service	17176
21	A	60	incidents	0
22	A	60	incidents	0
23	A	65	incidents	3

24 A	65	incidents	4
25 A	70	incidents	6
26 A	70	incidents	18
27 A	75	incidents	0
28 A	75	incidents	11
29 B	60	incidents	39
30 B	60	incidents	29

Cast Function in R:

The dcast function is used to convert data from long format to wide format. It is in reshape 2 package. First argument is data to be used . The second argument is a formula where the left hand remains as columns and right side specifies the columns that should become row names

```
1    recasted.ship <- dcast(molten.ships, type+year~variable,sum)
2     print(recasted.ship)
```

As the result cast function sums up the different variables for each **type** and **year** and those variables are casted back as columns and result is shown below.

type	year	period	service	incidents
1 A	60	135	190	0
2 A	65	135	2190	7
3 A	70	135	4865	24
4 A	75	135	2244	11
5 B	60	135	62058	68

For example **Type** A **year** 60 has two periods 60 and 75. This is summed up and result 135 is recorded under the column name **period** with the help of **cast** function**.**