

## Lecture 16 - R Software

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## Reordering Data Frames and Matrix Objects

### Reordering Data Frames

Consider, the following data:

```
> grass2
  mow  unmow
1  12     8
2  15     9
3  17     7
4  11     9
5  15    NA
```

- Create an index using the values in the mow column, with ties resolved by the unmow column:

```
> ii = with(grass2, order(mow, unmow))
```

```
> ii
```

```
[1] 4 1 2 5 3
```

- Now create a new data frame using the sort index you just made:

```
> grass2.resort = grass2[ii, ]
```

```
> grass2.resort
  mow  unmow
4   11     9
1   12     8
2   15     9
5   15    NA
3   17     7
```

- In order to give different order to the columns

```
> grass2.resort = grass2[ii, c(2, 1)]
> grass2.resort
```

```
  unmow  mow
4     9   11
1     8   12
2     9   15
5    NA   15
3     7   17
```

- To create a new column of values:

```
> sheep = c(12, 14, 17, 21, 17)
> sheep
[1] 12 14 17 21 17
```

```
> grass2.resort = with(grass2, data.frame(mow, unmow, sheep)[ii,])
> grass2.resort
```

	mow	unmow	sheep
4	11	9	21
1	12	8	12
2	15	9	14
5	15	NA	17
3	17	7	17

## Reordering Matrix Objects

Consider, the following matrix:

```
> bird
```

	Garden	Hedgerow	Parkland	Pasture	Woodland
Blackbird	47	10	40	2	2
Chaffinch	19	3	5	0	2
Great Tit	50	0	10	7	0
House Sparrow	46	16	8	4	0
Robin	9	3	0	0	2
Song Thrush	4	0	6	0	0

```
> ii = order(bird[,1], bird[,2], bird[,4])
```

```
> ii
```

```
[1] 6 5 2 4 1 3
```

```
> bird[ii,c(5:1)]
```

	Woodland	Pasture	Parkland	Hedgerow	Garden
Song Thrush	0	0	6	0	4
Robin	2	0	0	3	9
Chaffinch	2	0	5	3	19
House Sparrow	0	4	8	16	46
Blackbird	2	2	40	10	47
Great Tit	0	7	10	0	50

- new data can be added in the form of a simple vector or a matrix. The Urban item is a vector whereas the `bird.extra` item is a matrix:

```
> Urban
```

```
[1] 11 8 9 28 9 1
```

```
> bird.extra
```

	Urban
Blackbird	11
⋮	⋮
Robin	9
Song Thrush	1

```
> cbind(bird, Urban)[ii,]  
> cbind(bird, bird.extra)[ii,]
```

	Garden	Hedgerow	Parkland	Pasture	Woodland	Urban
Blackbird	47	10	40	2	2	1
Chaffinch	19	3	5	0	2	9
Great Tit	50	0	10	7	0	8
House Sparrow	46	16	8	4	0	28
Robin	9	3	0	0	2	11
Song Thrush	4	0	6	0	0	9