Vectors

Exercise 1

- Create a vector containing the values 1,2,3,4,5

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

- Create a vector containing the values 1 to 100

```
##   [1]   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18
##  [19]  19  20  21  22  23  24  25  26  27  28  29  30  31  32  33  34  35  36
##  [37]  37  38  39  40  41  42  43  44  45  46  47  48  49  50  51  52  53  54
##  [55]  55  56  57  58  59  60  61  62  63  64  65  66  67  68  69  70  71  72
##  [73]  73  74  75  76  77  78  79  80  81  82  83  84  85  86  87  88  89  90
##  [91]  91  92  93  94  95  96  97  98  99 100
```

- Create a vector containing the values 0,5,10,15,20

```
## [1]  0  5 10 15 20
```

- Create a vector containing the values 1,1,2,2,3,3

```
## [1] 1 1 2 2 3 3
```

- Create a vector containing the values 1,1,5,7,9,10

```
## [1]  1  1  5  7  9 10
```

Exercise 2

- Create a vector containing the values 1 to 10.

```
##  [1]  1  2  3  4  5  6  7  8  9 10
```

- Create a new vector with all but the first and last value.

```
## [1] 2 3 4 5 6 7 8 9
```

- Create a new vector with all but the second and fifth value.

```
## [1]  1  3  4  6  7  8  9 10
```

- Create a new vector of square root of the sixth and seventh position.

```
## [1] 2.449490 2.645751
```

- Create a new vector of alternating positions in the vector using another vector.

```
## [1] 1 3 5 7 9
```

Exercise 3

- Find the number of files in the present working directory.

```
## [1] 9
```

- List the first file in the present working directory.

```
## [1] "_course.yml"
```

Exercise 4

- Create a vector of the gene names Gene_1, Gene_2, Gene_3 Gene_4
- Create a vector of the expression values 1000, 3000, 10000, 12000
- Create a vector of the gene lengths 100, 3000, 200, 1000
- Assign the gene names as header for the expression vector
- Assign the gene names as header for the gene lengths vector

```
## Gene_1 Gene_2 Gene_3 Gene_4
##   1000   3000  10000  12000
```

```
## Gene_1 Gene_2 Gene_3 Gene_4
##    100   3000    200   1000
```

- Find the longest gene.

```
## [1] "Gene_2"
```

```
## [1] "Gene_2"
```

- Identify genes which have a length greater than 100 and expression greater than 10000

```
## [1] "Gene_4"
```

Bonus Questions

- Calculate the expression over the gene length for all genes (Length normalised expression).

```
## Gene_1 Gene_2 Gene_3 Gene_4
##     10      1     50     12
```

- Identify genes with a length normalised expression greater than the average

```
## [1] "Gene_3"
```