

Vector operations

1) Arithmetic operations

```
In [1]: v1 <- c(1,2,3)
        v2 <- c(4,5,6)
```

```
In [2]: v1
```

1 2 3

```
In [3]: v2
```

4 5 6

Addition

```
In [4]: v1+v2
```

5 7 9

Subtraction

```
In [5]: v1-v2
```

-3 -3 -3

Multiplication

```
In [6]: v1 * v2
```

4 10 18

Division

```
In [7]: v1/v2
```

0.25 0.4 0.5

Vector and Scalar operation

```
In [8]: v1 + 3
```

```
4 5 6
```

```
In [9]: v2 * 4
```

```
16 20 24
```

2) Comparison operations

```
In [10]: v1 < v2
```

```
TRUE TRUE TRUE
```

```
In [11]: v1 == v2
```

```
FALSE FALSE FALSE
```

```
In [12]: # Vector and scalar  
v1 > 2
```

```
FALSE FALSE TRUE
```

3) Logical operations

Logical AND & OR

```
In [13]: v1 && v2
```

```
TRUE
```

```
In [14]: v1 || v2
```

```
TRUE
```

The above operators works only for first element of the vector

Element wise AND & OR

```
In [15]: v1 & v2
```

```
TRUE TRUE TRUE
```

```
In [16]: v1 | v2
```

```
TRUE TRUE TRUE
```

4) Vector functions

Let's see some of the inbuilt functions that can be used with vectors

sum

```
In [17]: v <- c(10,20,25,34,56,78)
```

```
In [18]: sum(v)
```

```
223
```

Mean

```
In [19]: mean(v)
```

```
37.1666666666667
```

Product

```
In [20]: prod(v)
```

```
742560000
```

Variance

```
In [21]: var(v)
```

```
642.566666666667
```

Standard deviation

```
In [22]: sd(v)
```

```
25.3488987269007
```

Max

```
In [23]: max(v)
```

78

Min

```
In [24]: min(v)
```

10

Length

```
In [25]: length(v)
```

6

5) Indexing and Slicing

Indexing

```
In [26]: v <- c(10,20,25,34,56,78)
```

```
In [27]: # Index value starts with 1  
v[1]
```

10

```
In [28]: v[4]
```

34

```
In [29]: # For index more than length of vector  
v[7]
```

<NA>

Multiple Indexing

```
In [30]: v[c(1,4)]
```

10 34

```
In [31]: v[c(1,9)]
```

```
10 <NA>
```

Slicing

```
In [32]: v[2:4]
```

```
20 25 34
```

```
In [33]: v[3:6]
```

```
25 34 56 78
```

Indexing with names

```
In [34]: names(v) <- c('a','b','c','d','e','f')
```

```
In [35]: v['a']
```

```
a: 10
```

```
In [36]: v['e']
```

```
e: 56
```

```
In [37]: v[c('a','e')]
```

```
  a  10  
  e  56
```

```
In [38]: v['z']
```

```
NA: <NA>
```

Conditional selection

```
In [39]: v[v>20]
```

```
  c  25  
  d  34  
  e  56  
  f  78
```

```
In [40]: v[v %% 2 == 0]
```

```
  a  10  
  b  20  
  d  34  
  e  56  
  f  78
```

```
In [41]: v[v %% 4 == 0]
```

```
  b  20  
  e  56
```