

HOW TO USE SETS IN R

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Data Structures - Set

Sets define a ‘collection’ of objects, or things typically referred to as ‘elements’ or ‘members.’ The concept of sets arises naturally when dealing with any collection of objects, whether it be a group of numbers or anything else. Conceptually, the following examples can be defined as a ‘set’:

- {1, 2, 3, 4}
- {Red, Green, Blue}
- {Cat, Dog}

Set Operations

Declare sets

```
x <- c(1,2,5,13,6)
x
```

```
## [1]  1  2  5 13  6
```

```
y <- c(5,1,8,9,10,13,20)
y
```

```
## [1]  5  1  8  9 10 13 20
```

R includes some handy set operations, including these:

1. `union(x,y)`:- Union of the sets x and y -> $(x \cup y)$.
2. `intersect(x,y)`:- Intersection of the sets x and y -> $(x \cap y)$.
3. `setdiff(x,y)`:- Set difference between x and y, consisting of all elements of x that are not in y -> $(x \setminus y)$.
4. `setequal(x,y)`:- Test for equality between x and y
5. `c %in% y`:- Membership, testing whether c is an element of the set y
6. `choose(n,k)`:- Number of possible subsets of size k chosen from a set of size n

Examples:

```
union(x,y)
```

```
## [1]  1  2  5 13  6  8  9 10 20
```

```
intersect(x,y)
```

```
## [1]  1  5 13
```

```
setdiff(x,y)
```

```
## [1]  2  6
```

```
setdiff(y,x)
```

```
## [1]  8  9 10 20
```

```
setequal(x,y)
```

```
## [1] FALSE
```

```
setequal(x,c(1,2,5))
```

```
## [1] FALSE
```

```
2 %in% x
```

```
## [1] TRUE
```

```
2 %in% y
```

```
## [1] FALSE
```

```
choose(5,2)
```

```
## [1] 10
```