

Work Sheet #2

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Exercise 1 – Create a vector using : operator

a. Sequence from -5 to 5

```
y <- -5:5  
y
```

```
## [1] -5 -4 -3 -2 -1 0 1 2 3 4 5
```

b. x <- 1:7

```
x <- 1:7  
x
```

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

Exercise 2 – Create a vector using seq()

a. seq(1, 3, by=0.2)

```
vec <- seq(1, 3, by = 0.2)  
vec
```

```
## [1] 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0
```

Exercise 3 – Worker Ages

```
ages <- c(34, 28, 22, 36, 27, 18, 52, 39, 42, 29, 35, 31, 27,  
22, 37, 34, 19, 20, 57, 49, 50, 37, 46, 25, 17, 37, 43, 53, 41,  
51, 35, 24, 33, 41, 53, 40, 18, 44, 38, 41, 48, 27, 39, 19, 30,  
61, 54, 58, 26, 18)
```

a. Access 3rd element

```
ages[3]
```

```
## [1] 22
```

b. Access 2nd and 4th

```
ages[c(2,4)]
```

```
## [1] 28 36
```

c. Access all except the 1st

```
ages[-1]
```

```
## [1] 28 22 36 27 18 52 39 42 29 35 31 27 22 37 34 19 20 57 49 50 37 46 25 17 37  
## [26] 43 53 41 51 35 24 33 41 53 40 18 44 38 41 48 27 39 19 30 61 54 58 26 18
```

Exercise 4 – Named Vector

```
x <- c(first = 3, second = 0, third = 9)  
x
```

```
## first second third  
##      3      0      9
```

Access "first" and "third"

```
x[c("first", "third")]
```

```
## first third  
##      3      9
```

Exercise 5 – Modify a Vector

```
x <- -3:2
x
```

```
## [1] -3 -2 -1  0  1  2
```

Replace 2nd element with 0

```
x[2] <- 0
x
```

```
## [1] -3  0 -1  0  1  2
```

Exercise 6 – Fuel Data

a. Create data frame

```
month <- c("Jan", "Feb", "March", "Apr", "May", "June")
price <- c(52.50, 57.25, 60.00, 65.00, 74.25, 54.00)
quantity <- c(25, 30, 40, 50, 10, 45)

fuel_data <- data.frame(Month = month, Price = price, Quantity = quantity)
fuel_data
```

```
##   Month Price Quantity
## 1   Jan  52.50      25
## 2   Feb  57.25      30
## 3 March  60.00      40
## 4   Apr  65.00      50
## 5   May  74.25      10
## 6   June  54.00      45
```

b. Average expenditure (weighted mean)

```
avg_expenditure <- weighted.mean(price, quantity)
avg_expenditure
```

```
## [1] 59.2625
```

Exercise 7 – Rivers Dataset Analysis

a. Build vector of statistics

```
data <- c(
  length(rivers),
  sum(rivers),
  mean(rivers),
  median(rivers),
  var(rivers),
  sd(rivers),
  min(rivers),
  max(rivers)
)

names(data) <- c("Length", "Sum", "Mean", "Median", "Variance", "SD", "Min", "Max")
data
```

```
##      Length      Sum      Mean      Median  Variance      SD
##    141.0000 83357.0000  591.1844   425.0000 243908.4086 493.8708
##      Min      Max
##    135.0000 3710.0000
```

Exercise 8 – Forbes Celebrity Data

a. Create vectors

```
power_rank <- 1:25

celeb_names <- c("Tom Cruise", "Rolling Stones", "Oprah Winfrey", "U2",
  "Tiger Woods", "Steven Spielberg", "Howard Stern", "50 Cent",
  "Cast of Sopranos", "Dan Brown", "Bruce Springsteen", "Donald Trump",
  "Muhammad Ali", "Phaul McCartney", "George Lucas", "Elton John",
  "David Letterman", "Phil Mickelson", "J.K Rowling", "Brad Pitt",
  "Peter Jackson", "Dr. Phil McGraw", "Jay Lenon", "Celine Dion",
  "Kobe Bryant")

pay <- c(65, 90, 225, 110, 90, 332, 302, 41, 52, 88, 55, 44, 55, 40,
  233, 44, 40, 47, 75, 25, 39, 45, 32, 40, 31)

forbes <- data.frame(
  Power_Rank = power_rank,
  Celebrity_Name = celeb_names,
  Pay = pay
)

forbes
```

```
##      Power_Rank  Celebrity_Name Pay
## 1             1      Tom Cruise  65
## 2             2  Rolling Stones  90
## 3             3    Oprah Winfrey 225
```

## 4	4	U2	110
## 5	5	Tiger Woods	90
## 6	6	Steven Spielberg	332
## 7	7	Howard Stern	302
## 8	8	50 Cent	41
## 9	9	Cast of Sopranos	52
## 10	10	Dan Brown	88
## 11	11	Bruce Springsteen	55
## 12	12	Donald Trump	44
## 13	13	Muhammad Ali	55
## 14	14	Phaul McCartney	40
## 15	15	George Lucas	233
## 16	16	Elton John	44
## 17	17	David Letterman	40
## 18	18	Phil Mickelson	47
## 19	19	J.K Rowling	75
## 20	20	Brad Pitt	25
## 21	21	Peter Jackson	39
## 22	22	Dr. Phil McGraw	45
## 23	23	Jay Lenon	32
## 24	24	Celine Dion	40
## 25	25	Kobe Bryant	31

b. Modify J.K. Rowling's ranking + pay

```
idx <- which(forbes$Celebrity_Name == "J.K Rowling")
forbes$Power_Rank[idx] <- 15
forbes$Pay[idx] <- 90

forbes[idx, ]
```

##	Power_Rank	Celebrity_Name	Pay
## 19	15	J.K Rowling	90

c. Interpretation

J.K. Rowling's updated rank of **15** and higher pay reflect her strong cultural and financial influence.