ass1

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1. What are the measures of central tendency and variation of data.

Central tendency: mean, median, mode. Variation of data: range, variance, standard deviation.

2. What are the different ways to create a vector in R?

```r
x2.1 <- 1:5
x2.1
```

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

```r
x2.2 <- c(1,2,3,4,5)
x2.2
```

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

```r
x2.3 <- c(1:5)
x2.3
```

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

```r
x2.4 <- seq(1,5)
x2.4
```

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

```r
x2.5 <- seq(1,9,by=2)
x2.5
```

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

```r
x2.6 <- seq(1,9,length.out=5)
x2.6
```

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

3. Create the following vector and check the class ('x','x','x',1,3,5,7,9,2,4,6,8,10)

```r
x3 <- c('x','x','x',1,3,5,7,9,2,4,6,8,10)
class(x3)
```

```
## [1] "character"
```

4. Create a vector of positive odd integers less than 100

```r
x4 <- seq(1, 100, by=2)
x4
```

```
##  [1]  1  3  5  7  9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45
## [24] 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91
## [47] 93 95 97 99
```

5. Remove the values greater than 60 and less than 80

```r
x5 <- x4[x4 <= 60 | x4 >= 80]
x5
```

```
##  [1]  1  3  5  7  9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45
```

```
## [24] 47 49 51 53 55 57 59 81 83 85 87 89 91 93 95 97 99
```

6. Write a function to return standard deviation, mean, and median of the vector from Question 5.

```
calculator <- function(numbers) {
  figures.sd <- sd(numbers)
  figures.mean <- mean(numbers)
  figures.median <- median(numbers)
  return(c(figures.sd,figures.mean,figures.median))
}
x6 <- calculator(x5)
x6
```

```
## [1] 30.51691 45.00000 40.00000
```

7. Create two matrices of the form from the given set of numbers in two ways x1 = {2,3,7,1,6,2,3,5,1} and x2 = {3,2,9,0,7,8,5,8,2}

```
x7.x1 <- matrix(c(2,3,7,1,6,2,3,5,1), 3, 3)
x7.x1
```

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

```
x7.x2 <- matrix(c(3,2,9,0,7,8,5,8,2), ncol=3)
x7.x2
```

```
##      [,1] [,2] [,3]
## [1,]    3    0    5
## [2,]    2    7    8
## [3,]    9    8    2
```

8. Find the matrix product

```
x8 <- x7.x1 %*% x7.x2
x8
```

```
##      [,1] [,2] [,3]
## [1,]   35   31   24
## [2,]   66   82   73
## [3,]   34   22   53
```

9. Fin the class of 'iris' dataframe, find the class of all the columns of all the columns of 'iris' get the summary. Get rownames, get column names. Get the number of rows and the number of columns.

```
class(iris)
```

```
## [1] "data.frame"
```

```
class(iris[,1])
```

```
## [1] "numeric"
```

```
class(iris[,2])
```

```
## [1] "numeric"
```

```
class(iris[,3])
```

```
## [1] "numeric"
```

```r
class(iris[,4])
```

```
## [1] "numeric"
```

```r
class(iris[,5])
```

```
## [1] "factor"
```

```r
str(iris)
```

```
## 'data.frame':    150 obs. of  5 variables:
##  $ Sepal.Length: num  5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
##  $ Sepal.Width : num  3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
##  $ Petal.Length: num  1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
##  $ Petal.Width : num  0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
##  $ Species     : Factor w/ 3 levels "setosa","versicolor",..: 1 1 1 1 1 1 1 1 1 1 ...
```

```r
rownames(iris)
```

```
##   [1] "1"   "2"   "3"   "4"   "5"   "6"   "7"   "8"   "9"   "10"  "11"
##  [12] "12"  "13"  "14"  "15"  "16"  "17"  "18"  "19"  "20"  "21"  "22"
##  [23] "23"  "24"  "25"  "26"  "27"  "28"  "29"  "30"  "31"  "32"  "33"
##  [34] "34"  "35"  "36"  "37"  "38"  "39"  "40"  "41"  "42"  "43"  "44"
##  [45] "45"  "46"  "47"  "48"  "49"  "50"  "51"  "52"  "53"  "54"  "55"
##  [56] "56"  "57"  "58"  "59"  "60"  "61"  "62"  "63"  "64"  "65"  "66"
##  [67] "67"  "68"  "69"  "70"  "71"  "72"  "73"  "74"  "75"  "76"  "77"
##  [78] "78"  "79"  "80"  "81"  "82"  "83"  "84"  "85"  "86"  "87"  "88"
##  [89] "89"  "90"  "91"  "92"  "93"  "94"  "95"  "96"  "97"  "98"  "99"
## [100] "100" "101" "102" "103" "104" "105" "106" "107" "108" "109" "110"
## [111] "111" "112" "113" "114" "115" "116" "117" "118" "119" "120" "121"
## [122] "122" "123" "124" "125" "126" "127" "128" "129" "130" "131" "132"
## [133] "133" "134" "135" "136" "137" "138" "139" "140" "141" "142" "143"
## [144] "144" "145" "146" "147" "148" "149" "150"
```

```r
colnames(iris)
```

```
## [1] "Sepal.Length" "Sepal.Width"  "Petal.Length" "Petal.Width"
## [5] "Species"
```

```r
nrow(iris)
```

```
## [1] 150
```

```r
ncol(iris)
```

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

10. Get the last two rows in the last 2 columns from iris dataset.

```r
x10 <- iris[(nrow(iris)-1):nrow(iris),(ncol(iris)-1):ncol(iris)]
x10
```

```
##     Petal.Width  Species
## 149         2.3 virginica
## 150         1.8 virginica
```