Lab 2

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1) Create the following vetors using rep function in R:

```
V1 = rep(c(1,2,3,4,5), 5)
V2 = rep(c(1,2,3,4,5,6), each=4)
V3 = rep(c(5,10,15,20,25), 1:5)
V4 = rep(c("Math", "CS", "STAT", "PHY"), times=c(2,2,3,3))
```

a) V1

```
V1
```

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

b) V2

```
V2
```

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

c) V3

```
V3
```

```
##  [1]  5 10 10 15 15 15 20 20 20 20 25 25 25 25 25
```

d) V4

```
noquote(V4)
```

```
##  [1] Math Math CS   CS   STAT STAT STAT PHY  PHY  PHY
```

---

2) Import the data below in R using scan function

```
# Scan-ed from file (for report)
# Data in file: 2 4 5 6 7 8 9 2 3 4 5 6 77 89 45 67 8 9 0 12
scan_import = scan(file="C:/repos/STAT 50001/Lab 2/scan_data.txt", nmax=20)
scan_import
```

```
##  [1]  2  4  5  6  7  8  9  2  3  4  5  6 77 89 45 67  8  9  0 12
```

---

3) Generate the following sequence of numbers

```
a = seq(1,50)
b = seq(2,50,2)
```

```r
c = LETTERS[seq(from=1, to=8)]
d = letters[seq(from=5, to=12)]
```

a) a

```r
a
```

```
##  [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
## [26] 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
```

b) b

```r
b
```

```
##  [1]  2  4  6  8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50
```

c) c

```r
c
```

```
## [1] "A" "B" "C" "D" "E" "F" "G" "H"
```

d) d

```r
noquote(d)
```

```
## [1] e f g h i j k l
```

---

4) Suppose we have the data below

```r
data = c(2,5,7,8,9,3,5,8,67,45, 1,NA, 34,23,12,90)
data
```

```
##  [1]  2  5  7  8  9  3  5  8 67 45  1 NA 34 23 12 90
```

a) How many observations are there in the data set?

```r
length(data)
```

```
## [1] 16
```

b) Is there any missing value?

```r
any(is.na(data))
```

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

c) Identify the location of the missing value

```r
which(is.na(data))
```

```
## [1] 12
```

d.1) Identify the smallest value

```r
data[which.min(data)]
```

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

d.2) Identify the smallest value position

```r
which.min(data)
```

```
## [1] 11
```

d.3) Identify the largest value

```
data[which.max(data)]
```

```
## [1] 90
```

d.4) Identify the largest value position

```
which.max(data)
```

```
## [1] 16
```