Lab 1 R Assignment Notebook

Xuanpei Ouyang

Assignment problems

Make vector (7 8 6 5 4 3 2 1)

```
a = c(7:8, 6:1)
a
```

```
## [1] 7 8 6 5 4 3 2 1
```

Make vector (2 4 6 8 10 12 14)

```
b = seq(from = 2, to = 14, by = 2)
b
```

```
## [1]  2  4  6  8 10 12 14
```

Make vector (1 2 2 3 3 3 4 4 4 4 5 5 5 5 5)

```
c = rep(c(1,2,3,4,5), c(1,2,3,4,5))
c
```

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

Make vector (1 2 3 1 2 3 1 2 3)

```
d = rep(c(1,2,3), 3)
d
```

```
## [1] 1 2 3 1 2 3 1 2 3
```

Make vector of length 100 with all entries = 3 .

```
e = rep(3, 100)
e
```

```
##   [1] 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
##  [36] 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
##  [71] 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
```

Concatenate the first two vectors.

```
f = c(a, b)
f
```

```
##  [1]  7  8  6  5  4  3  2  1  2  4  6  8 10 12 14
```

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Make a matrix (3 2 2; 2 3 2; 2 2 3)

```
m1 = matrix(2, nrow = 3, ncol = 3) + diag(rep(1,3))
m1
```

```
##      [,1] [,2] [,3]
## [1,]    3    2    2
## [2,]    2    3    2
```

```
## [3,]    2    2    3
```

Add a new row (2 6 8) at the end.

```
m2 = rbind(m1, c(2,6,8))
m2
```

```
##      [,1] [,2] [,3]
## [1,]    3    2    2
## [2,]    2    3    2
## [3,]    2    2    3
## [4,]    2    6    8
```

Add a new column (1 2 3 4)

```
m3 = cbind(m2, c(1,2,3,4))
m3
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    3    2    2    1
## [2,]    2    3    2    2
## [3,]    2    2    3    3
## [4,]    2    6    8    4
```

Whats the new dimension of the matrix.

```
m3_d = dim(m3)
m3_d
```

```
## [1] 4 4
```

Create a matrix with no of rows = 10, ncol = 20 and all entries zero.

```
m4 = matrix(0, nrow = 10, ncol = 20)
m4
```

```
##       [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] [,11] [,12] [,13]
##  [1,]    0    0    0    0    0    0    0    0    0     0     0     0     0
##  [2,]    0    0    0    0    0    0    0    0    0     0     0     0     0
##  [3,]    0    0    0    0    0    0    0    0    0     0     0     0     0
##  [4,]    0    0    0    0    0    0    0    0    0     0     0     0     0
##  [5,]    0    0    0    0    0    0    0    0    0     0     0     0     0
##  [6,]    0    0    0    0    0    0    0    0    0     0     0     0     0
##  [7,]    0    0    0    0    0    0    0    0    0     0     0     0     0
##  [8,]    0    0    0    0    0    0    0    0    0     0     0     0     0
##  [9,]    0    0    0    0    0    0    0    0    0     0     0     0     0
## [10,]    0    0    0    0    0    0    0    0    0     0     0     0     0
##       [,14] [,15] [,16] [,17] [,18] [,19] [,20]
##  [1,]     0     0     0     0     0     0     0
##  [2,]     0     0     0     0     0     0     0
##  [3,]     0     0     0     0     0     0     0
##  [4,]     0     0     0     0     0     0     0
##  [5,]     0     0     0     0     0     0     0
##  [6,]     0     0     0     0     0     0     0
##  [7,]     0     0     0     0     0     0     0
##  [8,]     0     0     0     0     0     0     0
##  [9,]     0     0     0     0     0     0     0
## [10,]     0     0     0     0     0     0     0
```

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Data structures.

Create a data frame for the following data (name it data_frame)

```
alpha beta gamma
  1    4     7
  2    5     8
  3    6     9
```

```
data_frame = data.frame(
  alpha = c(1,2,3),
  beta = c(4,5,6),
  gamma = c(7,8,9)
)
data_frame
```

```
##   alpha beta gamma
## 1     1    4     7
## 2     2    5     8
## 3     3    6     9
```

Add a new column “delta” with value c(7,8,9) to the data.

```
new_col = data.frame(
  delta = c(7,8,9)
)
data_frame = cbind(data_frame, new_col)
data_frame
```

```
##   alpha beta gamma delta
## 1     1    4     7     7
## 2     2    5     8     8
## 3     3    6     9     9
```

Add new row (1 2 3 4) and (1 4 5 8)

```
new_rows = data.frame(
  alpha = c(1,1),
  beta = c(2,4),
  gamma = c(3,5),
  delta = c(4,8)
)
data_frame = rbind(data_frame, new_rows)
data_frame
```

```
##   alpha beta gamma delta
## 1     1    4     7     7
## 2     2    5     8     8
## 3     3    6     9     9
## 4     1    2     3     4
## 5     1    4     5     8
```

Create a new data frame with column “alpha” and “gamma” (name it new_data_frame)

```
new_data_frame = data.frame(
  alpha = data_frame$alpha,
  gamma = data_frame$gamma
```

```
)
new_data_frame
```

```
##   alpha gamma
## 1     1     7
## 2     2     8
## 3     3     9
## 4     1     3
## 5     1     5
```

Extract the data with "alpha" = 1.

```
new_data_frame[new_data_frame$alpha == 1,]
```

```
##   alpha gamma
## 1     1     7
## 4     1     3
## 5     1     5
```

Create a new data frame with first two rows of new_data_frame and print it.

```
new_data_frame2 = new_data_frame[1:2,]
new_data_frame2
```

```
##   alpha gamma
## 1     1     7
## 2     2     8
```

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