R Functions and Loops for Thisted Mini-project

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Floor

We need a **floor** or maybe a **trunc** function. Be careful, **trunc** "rounds" toward 0 and **floor** does not.

```r
(x <- pi*(-2:2))
```

```
## [1] -6.283185 -3.141593  0.000000  3.141593  6.283185
```

```r
x.trunc <- trunc(x)
x.floor <- floor(x)
cbind(x, x.trunc, x.floor)
```

```
##              x x.trunc x.floor
## [1,] -6.283185      -6      -7
## [2,] -3.141593      -3      -4
## [3,]  0.000000       0       0
## [4,]  3.141593       3       3
## [5,]  6.283185       6       6
```

Repeat

A **repeat** or **while** loop will be helpful.

```r
k <- 5
while(k >= 0){
  print(k)
  k <- k-1
}
```

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

```r
k <- 5
repeat{
  print(k)
  k <- k-1
  if(k < 0) break
}
```

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

```
## [1] 0
```

Random Uniform(0,1)
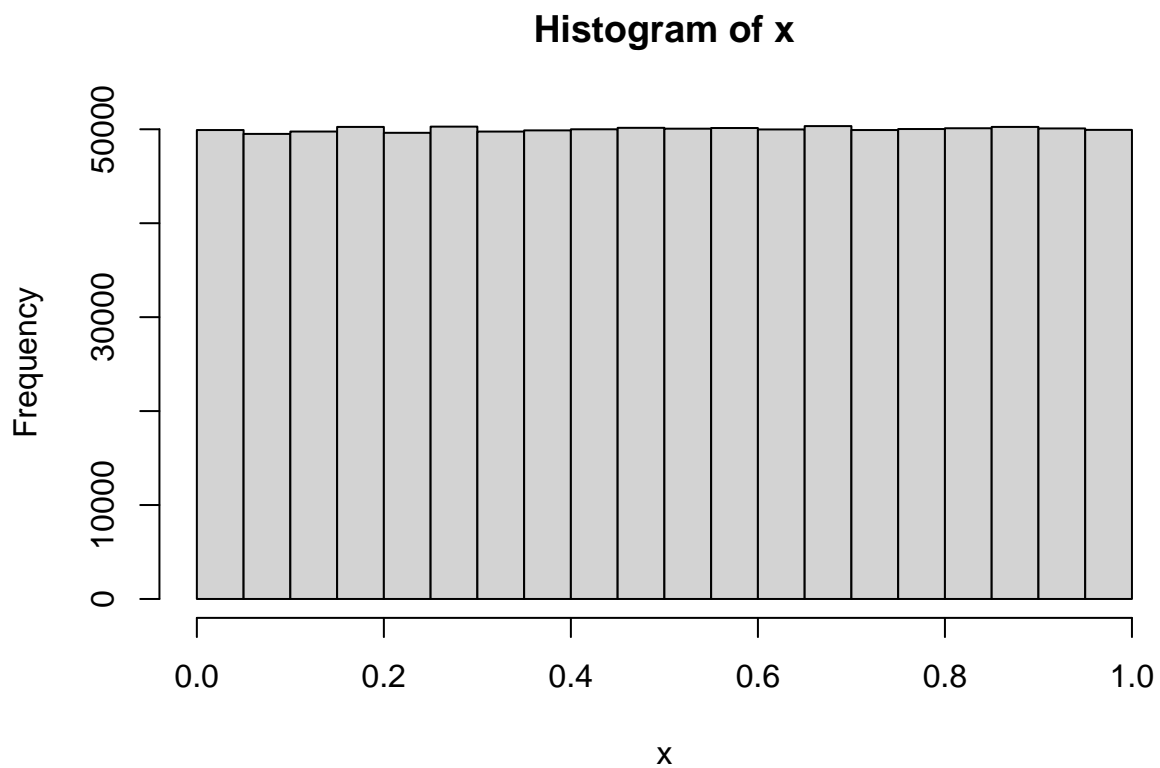
Lastly, we need a random uniform number generator.

```
x<- runif(1000000)
mean(x)
```

```
## [1] 0.5005208
```

```
var(x)
```

```
## [1] 0.08325125
```

```
hist(x)
```

Histogram of x

Lengths of Lists

We can determine the length of the list/vector by using **length**.

```
x <- 1:10
length(x)
```

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

My Function

We can create our own functions.

```r
my.perm <- function(x = -3:3){
  M <- length(x)
  return(sample(x))
}

my.perm()
```

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

```r
my.perm(2:7)
```

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