STAT 240 - Assignment 4

Problem 1a

```r
counts = function(x, n) {
  x_max = max(x)
  x_min = min(x)
  n_diff = (x_max-x_min) / n
  result = vector(mode='numeric', length=n)
  for(i in 1:length(x)) {
    for(j in 1:n) {
      if(j == 1) {
        if (x[i]>=x_min & x[i]<=x_min+n_diff) {
          result[j] = result[j] + 1
          break
        }
      }
      if (x[i]>x_min+(n_diff*(j-1)) & x[i]<=x_min+(n_diff*(j))) {
        result[j] = result[j] + 1
        break
      }
    }
  }
  return(result)
}
```
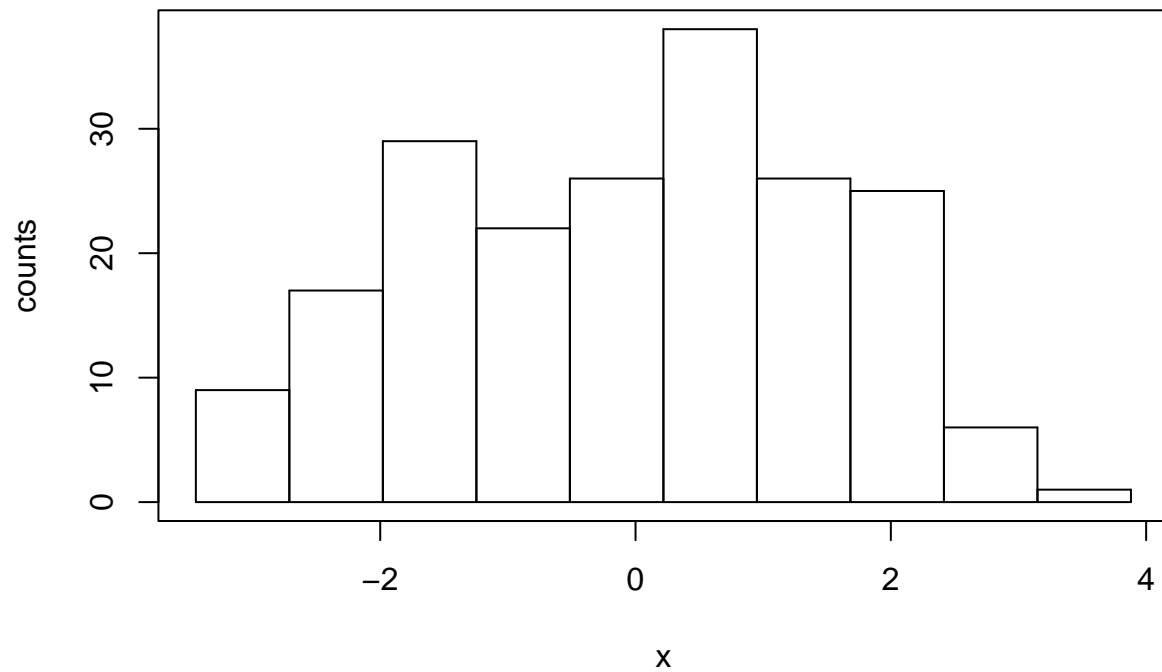
Problem 1b

```r
histo = function(x, n) {
  x_max = max(x)
  x_min = min(x)
  n_diff = (x_max-x_min) / n
  counts = vector(mode='numeric', length=n)
  for(i in 1:length(x)) {
    for(j in 1:n) {
      if(j == 1){
        if(x[i]>=x_min & x[i]<=x_min+n_diff) {
          counts[j] = counts[j] + 1
          break
        }
      }
      if(x[i]>x_min+(n_diff*(j-1)) & x[i]<=x_min+(n_diff*j)) {
        counts[j] = counts[j] + 1
        break
```
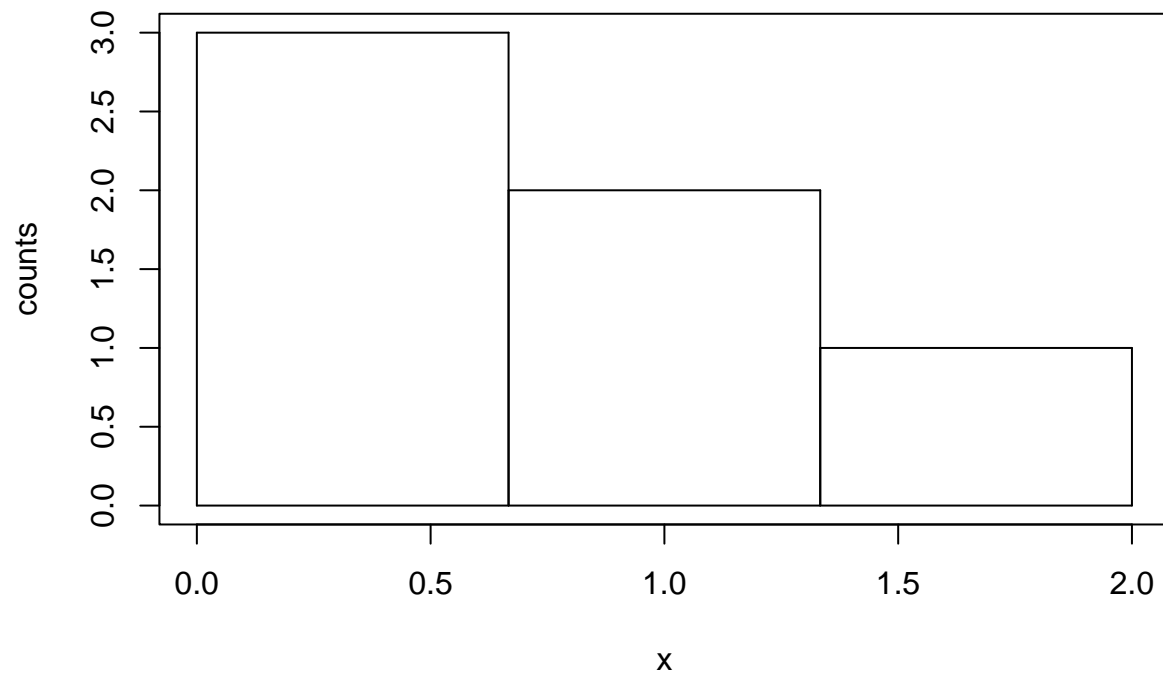
```
      }
    }
  }
  plot(1, type='n', xlab='x', ylab='counts',
       xlim=c(x_min, x_max), ylim=c(0, max(counts))
       )
  for(i in 1:n) {
    lines(c(x_min+(n_diff*(i-1)), x_min+(n_diff*(i-1))), c(0, counts[i]))
    lines(c(x_min+(n_diff*i), x_min+(n_diff*i)), c(0, counts[i]))
    lines(c(x_min+(n_diff*(i-1)), x_min+(n_diff*i)), c(counts[i], counts[i]))
  }
  lines(c(x_min, x_max), c(0, 0))
}
```
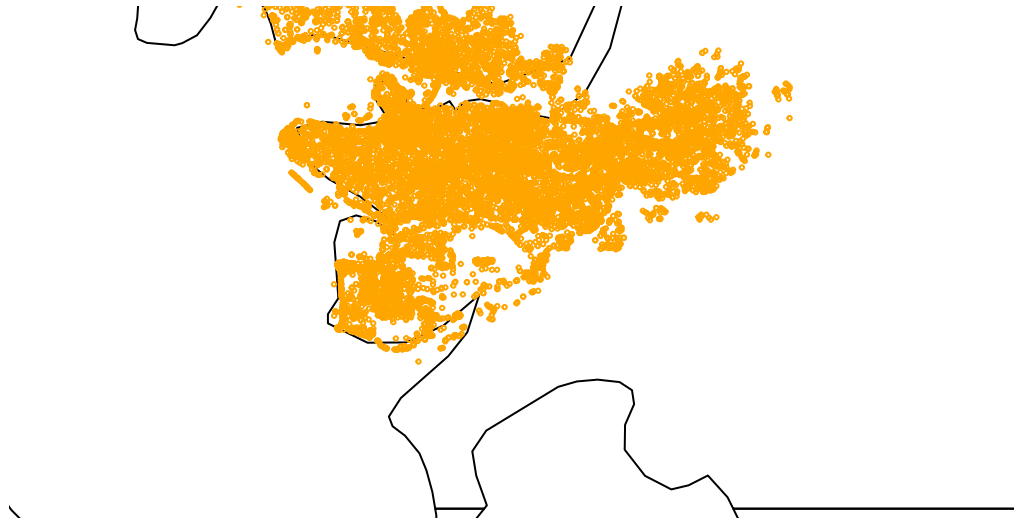
Problem 1c

Problem 1d


```
## Loading required package: sp

## ### Welcome to rworldmap ###

## For a short introduction type :   vignette('rworldmap')
```

Problem 2a

Pokemon in Vancouver (Points)

Problem 2b

Pokemon in Vancouver (Contour)

Problem 2c

The peaks of the plot are in Stanley Park, North Vancouver, Vancouver, and Burnaby. This is because the game is based on augmented reality and objectives of the game will be largely available in places with higher player (population) density.

Problem 2d

Pokemon in Vancouver (Contour) – Detailed

Sea

Land

North Vancouver

Stanley Park

UBC

Vancouver

Burnaby

SFU

Coquitlam

Richmond

15

10

7

3

10

8

20

20

15

10