Arkaraj Mukherjee: H.W. 1:

Solution 1:

a.
```
instasee = c(8,8,3,12,13,10,1,8,7)
differences = diff(instasee)
differences

## [1]  0 -5  9  1 -3 -9  7 -1
```

The `diff` function gives us a vector that has the differences between adjacent terms in the input vector as output. Adding 24 to every entry in this `differences` vector gives us the vector `x` with the number of hours between consecutive logins as we are working with the 24-hour format.

```
x = differences + 24
x

## [1] 24 19 33 25 21 15 31 23
```

b.
```
max(x)

## [1] 33

mean(x)

## [1] 23.875

min(x)

## [1] 15
```

Solution 2:

a.
```
scoreSS = c(7,6,10,8,7,9,9,6,4,10,8,6,9,10)
max(scoreSS)

## [1] 10

mean(scoreSS)
```

```
## [1] 7.785714

min(scoreSS)

## [1] 4
```

b. I can fix this by updating the 4-th value in the vector `scoreSS` as follows

```
scoreSS[4] = 5
scoreSS

##  [1]  7  6 10  5  7  9  9  6  4 10  8  6  9 10

mean(scoreSS)

## [1] 7.571429
```

c.
```
sum(scoreSS >= 9)

## [1] 6
```

d. That command outputs the sum of all those entries in the vector `scoreSS` which are greater than or equal to 9.

```
100*length(scoreSS[scoreSS<17])/length(scoreSS)

## [1] 100
```

Solution 3

a.
```
Shreelakshmibill = c(460,330,390,370,460,300,480,320,490,350,300,280)
Shreelakshmibill

##  [1] 460 330 390 370 460 300 480 320 490 350 300 280

sum(Shreelakshmibill)

## [1] 4530
```

b.
```
min(Shreelakshmibill)
```

```
## [1] 280
```

```
max(Shreelakshmibill)
```

```
## [1] 490
```

These are the minimum and maximum amounts spent in some month respectively.

c. The number of months with the amount being greater than 50 can be found as follows:

```
length(Shreelakshmibill[Shreelakshmibill>400])
```

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

The percentage too can be found from this like this:

```
100*length(Shreelakshmibill[Shreelakshmibill>400])/length(Shreelakshmibill)
```

```
## [1] 33.33333
```

d.
```
freemoney = 3000 - Shreelakshmibill
freemoney
```

```
##  [1] 2540 2670 2610 2630 2540 2700 2520 2680 2510 2650 2700 2720
```

The average money available each month after paying the phone bill is the aveerage of entries in the vector `freemoney`

```
mean(freemoney)
```

```
## [1] 2622.5
```