SLIIT UNI
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Faculty of Computing

Year 2 Semester 1 (2025)

IT2120 - Probability and Statistics Lab Sheet 08

IT24103549

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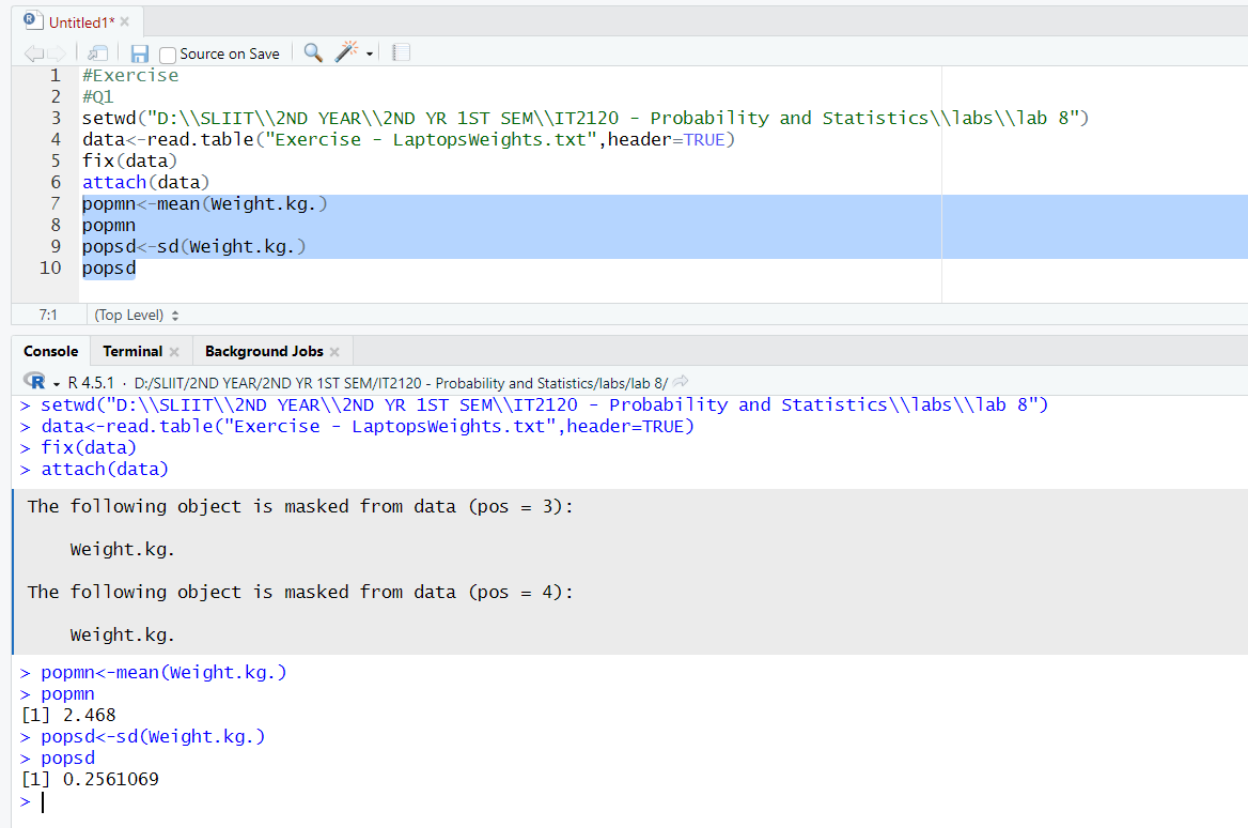
Q1



Q2

```
#Q2

samples<-c()
n<-c()

for(i in 1:25){
  s<-sample(Weight.kg.,6,replace = TRUE)
  samples<-cbind(samples,s)
  n<-c(n,paste('S',i))
}

colnames(samples)=n

s.means<-apply(samples,2,mean)
s.means

s.sd<-apply(samples,2,sd)
s.sd
```

30:8 (Top Level)

```
>
> samples<-c()
> n<-c()
> for(i in 1:25){
+   s<-sample(Weight.kg.,6,replace = TRUE)
+   samples<-cbind(samples,s)
+   n<-c(n,paste('S',i))
+ }
> colnames(samples)=n
>
> s.means<-apply(samples,2,mean)
> s.means
    S 1     S 2     S 3     S 4     S 5     S 6     S 7     S 8     S 9    S 10    S 11    S 12    S 13    S 14    S 15
2.481667 2.346667 2.461667 2.543333 2.306667 2.518333 2.536667 2.288333 2.395000 2.476667 2.481667 2.591667 2.221667 2.373333 2.595000
    S 16    S 17    S 18    S 19    S 20    S 21    S 22    S 23    S 24    S 25
2.298333 2.401667 2.480000 2.440000 2.560000 2.460000 2.261667 2.551667 2.498333 2.681667
>
> s.sd<-apply(samples,2,sd)
> s.sd
       S 1        S 2        S 3        S 4        S 5        S 6        S 7        S 8        S 9       S 10       S 11       S 12
0.18904144 0.26005128 0.13136463 0.25500327 0.40371607 0.22328606 0.19075289 0.18627041 0.28745434 0.28932104 0.23241486 0.25553212
      S 13       S 14       S 15       S 16       S 17       S 18       S 19       S 20       S 21       S 22       S 23       S 24
0.20855854 0.40702170 0.19491024 0.36858739 0.42513135 0.39572718 0.02966479 0.19214578 0.12425780 0.17127950 0.26156580 0.21264211
      S 25
0.13876839
>
```

Q3

```r
#Q3
#calculate the mean and standard deviation of the 25 sample means
samplemean<-mean(s.means)
samplemean
samplesd<-sd(s.sd)
samplesd

#state therelationship of them with true mean and true standard deviation
popmn
samplemean

truesd=popsd/5
samplesd
```

45:1 (Top Level)

Console | Terminal | Background Jobs

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```
> #Q3
> #calculate the mean and standard deviation of the 25 sample means
> samplemean<-mean(s.means)
> samplemean
[1] 2.450067
> samplesd<-sd(s.sd)
> samplesd
[1] 0.09883573
>
> #state therelationship of them with true mean and true standard deviation
> popmn
[1] 2.468
> samplemean
[1] 2.450067
>
> truesd=popsd/5
> samplesd
[1] 0.09883573
>
```