IT24102779

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Probability and Statistics

Lab Sheet 09

Question 1

```
1  setwd("C:\\Users\\damse\\Desktop\\IT24102779")
2  x<-c(3, 7, 11, 0, 7, 0, 4, 5, 6, 2)
3  t.test(x, mu = 3)
```

```
> setwd("C:\\Users\\damse\\Desktop\\IT24102779")
> x<-c(3, 7, 11, 0, 7, 0, 4, 5, 6, 2)
> t.test(x, mu = 3)

        One Sample t-test

data:  x
t = 1.3789, df = 9, p-value = 0.2012
alternative hypothesis: true mean is not equal to 3
95 percent confidence interval:
 2.0392 6.9608
sample estimates:
mean of x
      4.5
```

Question 2

```
6
7  #Question 2
8  Weight <- c(17.6, 20.6, 22.2, 15.3, 20.9, 21.0, 18.9, 18.9, 18.9, 18.2)
9  t.test(Weight, mu=25, alternative= "less")
10
11 #2
12 res <- t.test(Weight, mu=25, alternative= "less")
13 res$p.value
14 res$conf.int
15
```

```
> #Question 2
> Weight <- c(17.6, 20.6, 22.2, 15.3, 20.9, 21.0, 18.9, 18.9, 18.9, 18.2)
> t.test(Weight, mu=25, alternative= "less")

        One Sample t-test

data:  Weight
t = -9.0783, df = 9, p-value = 3.977e-06
alternative hypothesis: true mean is less than 25
95 percent confidence interval:
     -Inf 20.41105
sample estimates:
mean of x
    19.25
```

```
> #2
> res <- t.test(Weight, mu=25, alternative= "less")
> res$p.value
[1] 3.976692e-06
> res$conf.int
[1]     -Inf 20.41105
attr(,"conf.level")
[1] 0.95
```

Question 3

```r
#Question 3
#part 1
y <- rnorm(30, mean = 9.8, sd = 0.05)

#part 2
t.test(y, mu=10, alternative="greater")
```

```
> #Question 3
> #part 1
> y <- rnorm(30, mean = 9.8, sd = 0.05)
> #part 2
> t.test(y, mu=10, alternative="greater")

        One Sample t-test

data:  y
t = -21.043, df = 29, p-value = 1
alternative hypothesis: true mean is greater than 10
95 percent confidence interval:
 9.785813      Inf
sample estimates:
mean of x
 9.801816
```

Exercise

```r
#############Exercise##############
#part 1
baking_time <- rnorm(25, mean = 45, sd = 2)


# Part 2
t.test(baking_time, mu = 46, alternative = "less")

res_ex <- t.test(baking_time, mu = 46, alternative = "less")
res_ex$statistic
res_ex$p.value
res_ex$conf.int
```

```
> #############Exercise#############
> #part 1
> baking_time <- rnorm(25, mean = 45, sd = 2)
>
>
> # Part 2
> t.test(baking_time, mu = 46, alternative = "less")

        One Sample t-test

data:  baking_time
t = -6.3332, df = 24, p-value = 7.551e-07
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
     -Inf 44.28996
sample estimates:
mean of x
 43.65701

>
> res_ex <- t.test(baking_time, mu = 46, alternative = "less")
> res_ex$statistic
        t
-6.333246
> res_ex$p.value
[1] 7.551443e-07
> res_ex$conf.int
[1]     -Inf 44.28996
attr(,"conf.level")
[1] 0.95
```