

MATH 3080 Lab Project 3

Your Name

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- [Problem 1 \(8.31\)](#)

Remember: I expect to see commentary either in the text, in the code with comments created using `#`, or (preferably) both! **Failing to do so may result in lost points!**

Problem 1 (8.31)

The data set `normtemp` (**UsingR**) contains body measurements for 130 healthy, randomly selected individuals. The variable `temperature` contains normal body temperature data and the variable `gender` contains gender information, with male coded as 1 and female coded as 2. First, split the data by 'gender'. If the conditions for a two-sample t-test are met then perform the correct t-test to test if the population means (by gender) are equal. Make sure you run the correct test (are the variances equal or not and is the data independent). Is the difference statistically significant at the $\alpha=0.05$ level? Use the following codes to load the data set.

```
# install.packages('UsingR')
library(UsingR)
```

```
## Loading required package: MASS
```

```
## Loading required package: HistData
```

```
## Loading required package: Hmisc
```

```
## Loading required package: lattice
```

```
## Loading required package: survival
```

```
## Loading required package: Formula
```

```
## Loading required package: ggplot2
```

```
##
## Attaching package: 'Hmisc'
```

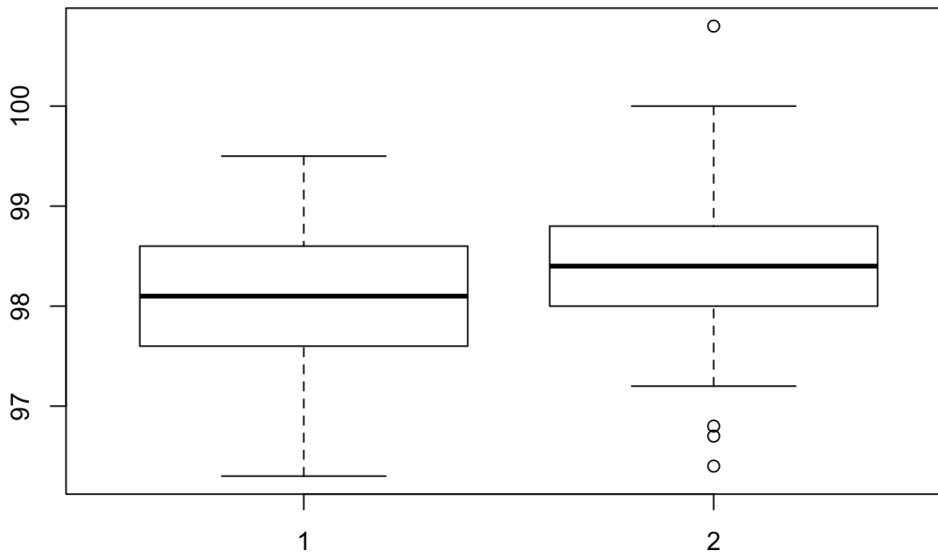
```
## The following objects are masked from 'package:base':
##
##   format.pval, round.POSIXt, trunc.POSIXt, units
```

```
##
## Attaching package: 'UsingR'
```

```
## The following object is masked from 'package:survival':
##
##   cancer
```

```
data(normtemp)
male_sample = normtemp[normtemp$gender == "1", ]
female_sample = normtemp[normtemp$gender == "2", ]

boxplot(male_sample$temperature, female_sample$temperature)
```



```
t.test(male_sample$temperature, female_sample$temperature, var.equal = TRUE)
```

```
##
## Two Sample t-test
##
## data: male_sample$temperature and female_sample$temperature
## t = -2.2854, df = 128, p-value = 0.02393
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.53963938 -0.03882216
## sample estimates:
## mean of x mean of y
## 98.10462 98.39385
```

```
t.test(male_sample$temperature, female_sample$temperature, paired = TRUE)
```

```
##
## Paired t-test
##
## data: male_sample$temperature and female_sample$temperature
## t = -12.686, df = 64, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
## -0.3347782 -0.2436833
## sample estimates:
## mean of the differences
## -0.2892308
```

```
# because p value < 5%, reject Ho. means are not equal, the difference is
# statistically significant.
```

```
# Your code here
```

Processing math: 100%