FinalExam

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```
library(qcc)
```

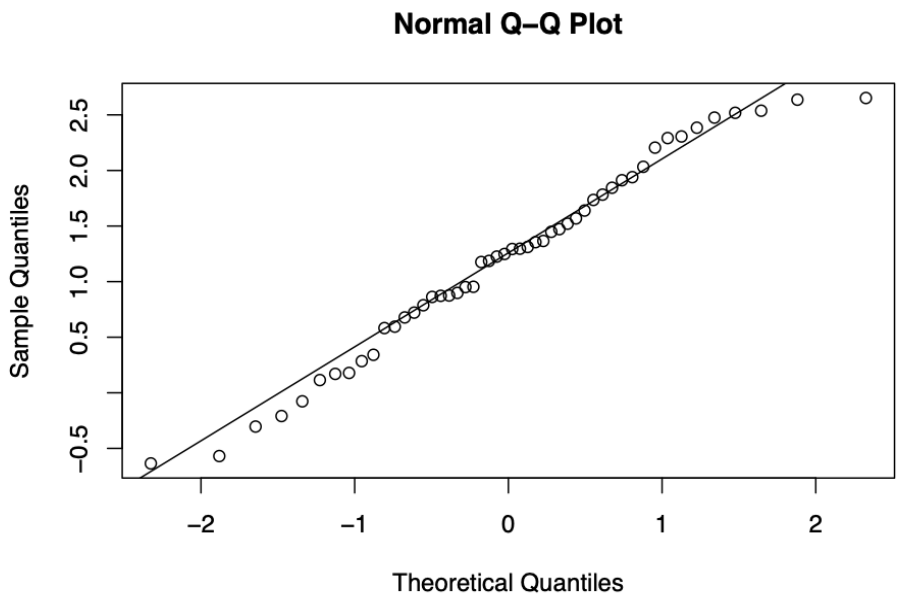
```
## Package 'qcc' version 2.7
```

```
## Type 'citation("qcc")' for citing this R package in publications.
```

```
###### Question 13 ######
# Part a
# Setting the seed ensures R generates the same random numbers
set.seed(10)
# generating 50 random numbers
normDis1 = rnorm(50, mean = 1.55)
str(normDis1)
```

```
##  num [1:50] 1.569 1.366 0.179 0.951 1.845 ...
```

```
# Q-Q plot, and Q-Q line
qqnorm(normDis1)
qqline(normDis1)
```

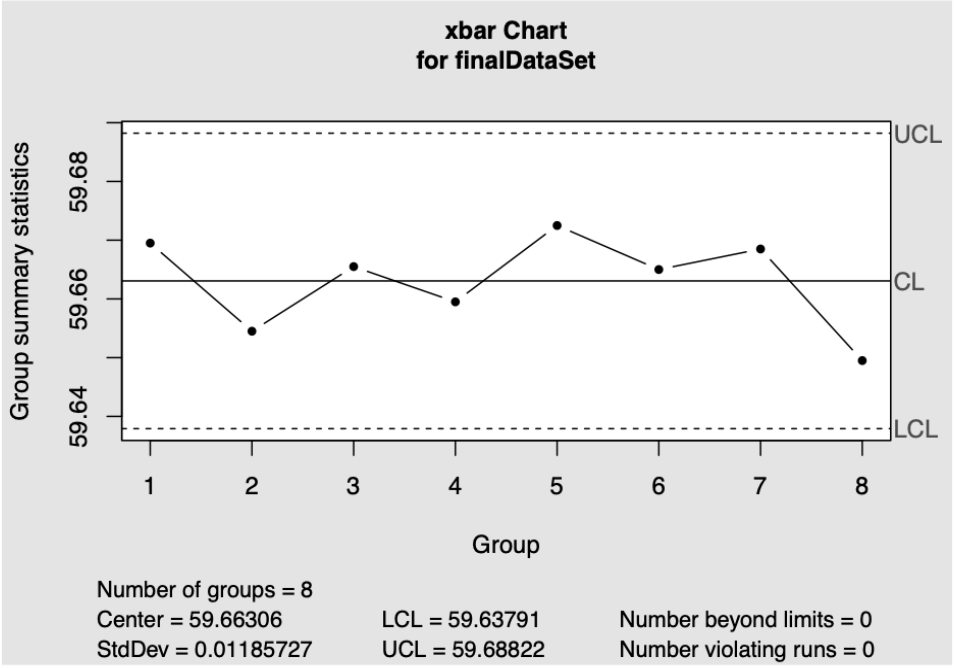



```
# Part b
# Mean with 75% Confidence Interval for normDis1
t.test(normDis1, conf.level = .75)
```

```
##
```

```
##  One Sample t-test
##
## data:  normDis1
## t = 9.8647, df = 49, p-value = 3.158e-13
## alternative hypothesis: true mean is not equal to 0
## 75 percent confidence interval:
##  1.066063 1.351346
## sample estimates:
## mean of x
##  1.208705
```

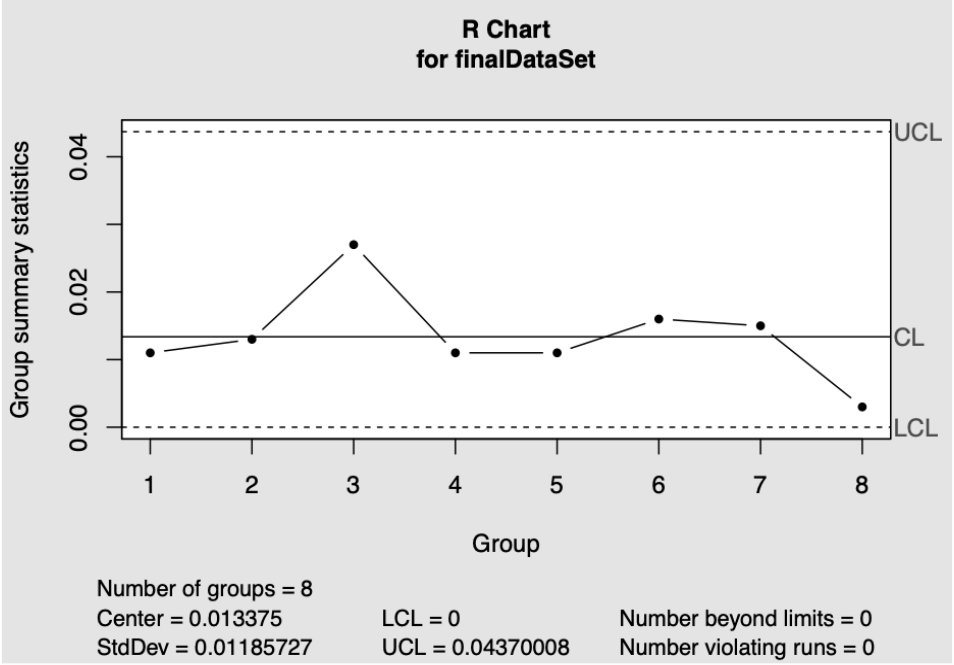
```r
# Part c
# R chart and x-bar chart
x1Final = c(59.664, 59.661, 59.679, 59.665, 59.667, 59.673, 59.676,
            59.648)
x2Final = c(59.675, 59.648, 59.652, 59.654, 59.678, 59.657, 59.661,
            59.651)
# Creating a dataframe from the variables
finalDataSet= data.frame(x1Final, x2Final)
# X-bar chart. There are no out-of-control signals in this chart
qcc(finalDataSet, type = "xbar")
```




```
## List of 11
##  $ call      : language qcc(data = finalDataSet, type = "xbar")
##  $ type      : chr "xbar"
##  $ data.name : chr "finalDataSet"
##  $ data      : num [1:8, 1:2] 59.7 59.7 59.7 59.7 59.7 ...
```

```
##   ..- attr(*, "dimnames")=List of 2
##  $ statistics: Named num [1:8] 59.7 59.7 59.7 59.7 59.7 ...
##   ..- attr(*, "names")= chr [1:8] "1" "2" "3" "4" ...
##  $ sizes     : int [1:8] 2 2 2 2 2 2 2 2
##  $ center    : num 59.7
##  $ std.dev   : num 0.0119
##  $ nsigmas   : num 3
##  $ limits    : num [1, 1:2] 59.6 59.7
##   ..- attr(*, "dimnames")=List of 2
##  $ violations:List of 2
##  - attr(*, "class")= chr "qcc"
```

```
# R-chart. There are no out-of-control signals in this chart
qcc(finalDataSet, type = "R")
```




```
## List of 11
##  $ call      : language qcc(data = finalDataSet, type = "R")
##  $ type      : chr "R"
##  $ data.name : chr "finalDataSet"
##  $ data      : num [1:8, 1:2] 59.7 59.7 59.7 59.7 59.7 ...
##   ..- attr(*, "dimnames")=List of 2
##  $ statistics: Named num [1:8] 0.011 0.013 0.027 0.011 0.011 ...
##   ..- attr(*, "names")= chr [1:8] "1" "2" "3" "4" ...
##  $ sizes     : int [1:8] 2 2 2 2 2 2 2 2
##  $ center    : num 0.0134
##  $ std.dev   : num 0.0119
##  $ nsigmas   : num 3
```

```
##  $ limits    : num [1, 1:2] 0 0.0437
##   ..- attr(*, "dimnames")=List of 2
##  $ violations:List of 2
##  - attr(*, "class")= chr "qcc"
```