Group 8 - Lab 7

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Lab 7

Using data from Problem 2.11 (from textbook). Test whether the true correlation is zero or not. Calculate the 90% CI. Interpret.

```
# Estimating the correlation coefficient
r = Sxy / sqrt(Sxx * SSt)
r
```

```
## [1] 0.7734903
```

```
R2 = SSr / SSt
R2
```

```
## [1] 0.5982872
```

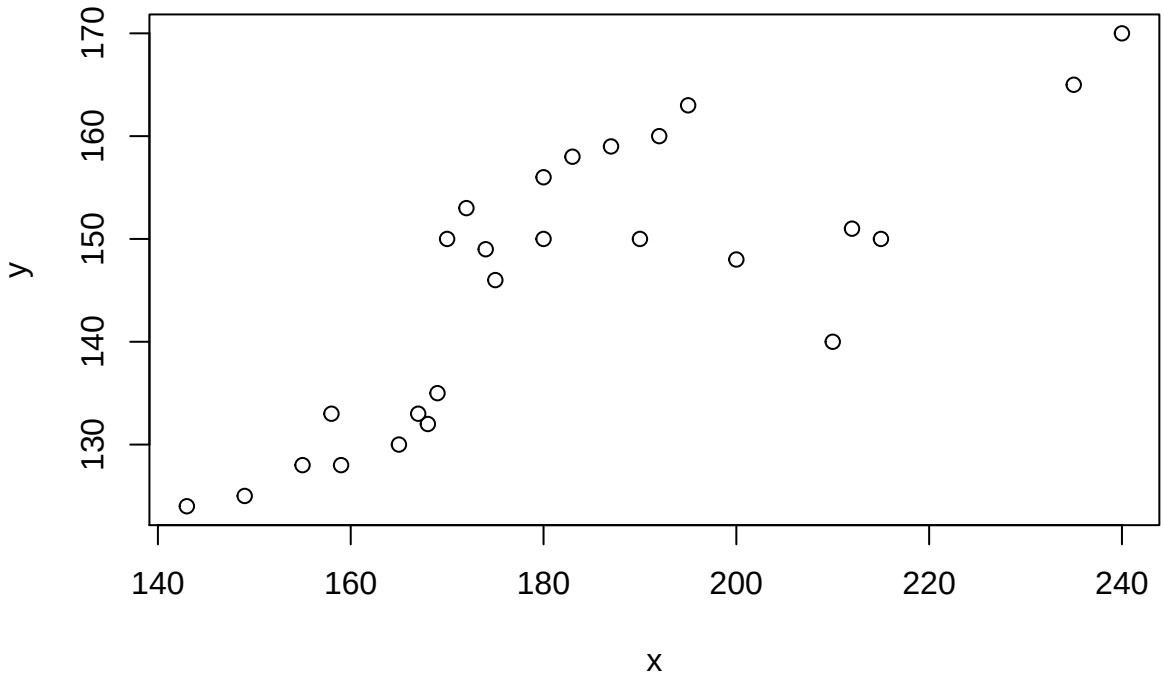
```
summary(lm(y~x))
```

```
##
## Call:
## lm(formula = y ~ x)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -17.182  -6.485  -2.519   8.926  12.143
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 69.10437   12.91013   5.353 1.71e-05 ***
## x            0.41942    0.07015   5.979 3.59e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.681 on 24 degrees of freedom
## Multiple R-squared:  0.5983, Adjusted R-squared:  0.5815
## F-statistic: 35.74 on 1 and 24 DF,  p-value: 3.591e-06
```

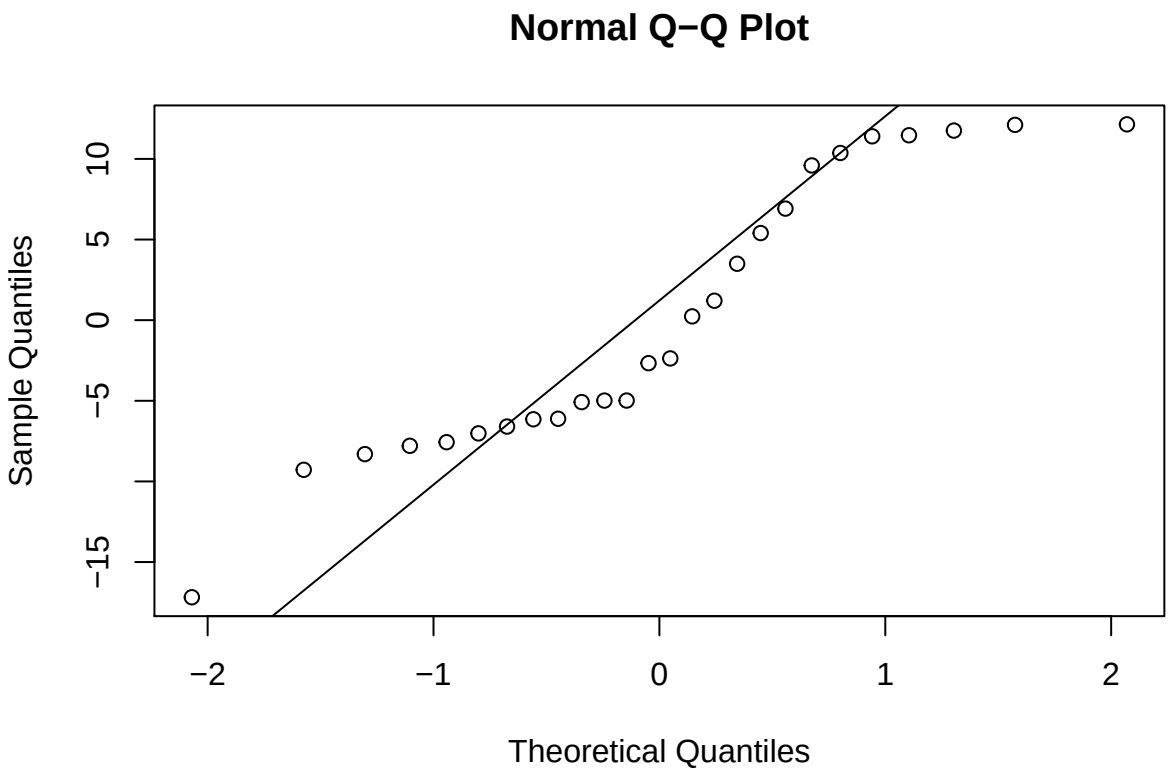
```
#summary(lm(y~x-1))
```

Testing true correlation

```
plot(x,y)
```




```
qqnorm(resid(lm(y~x)))
qqline(resid(lm(y~x)))
```




```
cor.test(x,y, conf.level = .9)
```

```
##
##  Pearson's product-moment correlation
##
## data:  x and y
## t = 5.9786, df = 24, p-value = 3.591e-06
## alternative hypothesis: true correlation is not equal to 0
## 90 percent confidence interval:
##  0.5953951 0.8791323
## sample estimates:
##       cor
## 0.7734903
```

Interpretation:

Using the Pearson's product-moment correlation test, we can see that the true correlation is not equal to 0. The bounds for the %90 CI is 0.5954 to 0.8791.The correlation of 0.7735 falls within these bounds.