Estimation.R

```
# install readxl package first
library(readxl)
# get data - see excel file for data description information
Congress <- read_excel("Piracy.xlsx", col_names = TRUE)


# 90% confidence interval for number of years served
t.test(Congress$years, conf.level = .90)

##
##  One Sample t-test
##
## data:  Congress$years
## t = 27.791, df = 533, p-value < 2.2e-16
## alternative hypothesis: true mean is not equal to 0
## 90 percent confidence interval:
##  11.06303 12.45757
## sample estimates:
## mean of x
##   11.7603
```

```r
#90% confidence interval for proportion with stance = "yes"
table(Congress$stance)
```

```
##
## leaning no         no  undecided    unknown        yes
##         44        122         11        294         63
```

```r
p_hat <- 63/534

  # exact binomial estimation method
binom.test(63, 534, p_hat, conf.level = .90)
```

```
##
##  Exact binomial test
##
## data:  63 and 534
## number of successes = 63, number of trials = 534, p-value = 1
## alternative hypothesis: true probability of success is not equal to 0.1179
775
## 90 percent confidence interval:
##  0.09569548 0.14346625
## sample estimates:
## probability of success
##              0.1179775
```

```r
  # using a Wilson score interval method that is generally preferred
prop.test(63, 534, conf.level = .90)
```

```
##
##  1-sample proportions test with continuity correction
##
## data:  63 out of 534, null probability 0.5
## X-squared = 310.2, df = 1, p-value < 2.2e-16
## alternative hypothesis: true p is not equal to 0.5
## 90 percent confidence interval:
##  0.09606583 0.14389690
## sample estimates:
##         p
## 0.1179775
```