Lab 15 R Script

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```
library(PASWR)
```

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

```
library(UsingR)
```

```
## Loading required package: MASS
## Loading required package: HistData
## Loading required package: Hmisc
## 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, units
##
## Attaching package: 'UsingR'
## The following object is masked from 'package:survival':
##
##     cancer
```

1) Honda Accord Gas Mileage

```
# Ho: The mileage data is not significantly different than a normal population
# Ha: The mileage data is significantly different than a normal population
gas = c(27,  26,  31,  30,  30,  28,  26,  24,  30,  30,  23,  30,  23)
shapiro.test(gas)
```

```
##
##  Shapiro-Wilk normality test
##
## data:  gas
## W = 0.86289, p-value = 0.04207
```

```
# With a p-value of 0.04207, we can reject the null hypothesis
# and can claim with evidence that the Honda Accord mileage collected
# differs from a normal population.
```

2) Credit-card Balance from Mobilize.org

```r
# Ho: Student credit card significantly debt does not differ from 1770 dollars
# Ha: Student credit card significantly debt differs from 1770 dollars
balance = c(6000, 870, 1530, 1660,
            1060, 1790, 1630, 3180,
            2180, 2370, 1800, 2170,
            1210, 410, 1720, 1270,
            570, 1050, 2320, 1120)
SIGN.test(balance, md=1770, conf.level=0.9)
```

```
##
##  One-sample Sign-Test
##
## data:  balance
## s = 8, p-value = 0.5034
## alternative hypothesis: true median is not equal to 1770
## 90 percent confidence interval:
##  1191.352 1876.665
## sample estimates:
## median of x
##        1645
##
## Achieved and Interpolated Confidence Intervals:
##
##                   Conf.Level   L.E.pt   U.E.pt
## Lower Achieved CI     0.8847 1210.000 1800.000
## Interpolated CI       0.9000 1191.352 1876.665
## Upper Achieved CI     0.9586 1120.000 2170.000
```

```r
# With a p-value of 0.5034, we fail to reject the null hypothesis
# and cannot claim that the debt of students at the college differs from $1770.
```

3) CEO Salaries at Top 199 US Companies

```r
# Ho: CEO salary average is not significantly more than $220,000
# Ha: CEO salary average is significantly more than $220,000
SIGN.test(exec.pay, md=22, alt="greater")
```

```
##
##  One-sample Sign-Test
##
## data:  exec.pay
## s = 113, p-value = 0.008506
## alternative hypothesis: true median is greater than 22
## 95 percent confidence interval:
##   23 Inf
## sample estimates:
## median of x
##          27
##
## Achieved and Interpolated Confidence Intervals:
##
##                   Conf.Level L.E.pt U.E.pt
## Lower Achieved CI     0.9407     23    Inf
## Interpolated CI       0.9500     23    Inf
## Upper Achieved CI     0.9557     23    Inf
```

```
# With a p-value of 0.00851, we have enough evidence to reject the null,
# and can claim that the median CEO salary is significantly greater than
# $220,000.
```