A4-Q2

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1.

```
x <- c(1.6, 0.1, 0.3, 0.0, -1.1, -0.1, -0.4, -0.4)
acf(x, plot = FALSE , type = "covariance", lag.max = 2)
```

```
##
## Autocovariances of series 'x', by lag
##
##      0      1      2
## 0.5250 0.0625 0.0788
```

The result of Q2(1) is same as Q1(1)

2.

```
x.yw <- ar.yw(x, aic= FALSE, order=1)
x.yw$ar
```

```
## [1] 0.1190476
```

```
x.yw$var.pred
```

```
## [1] 0.6900794
```

The coefficient estimates and estimated error variance are similar but little different of the estimated error variance of Q1(2).

3.

```
x.yw$ar[1]+c(-1.96,1.96)*sqrt(x.yw$asy.var.coef[1, 1])
```

```
## [1] -0.6754287  0.9135239
```

The 95% CI are also similar but but little different of Q1(3), because the estimated error variance are little different.

4.

```
x.yw$resid
```

```
## [1]          NA -0.09047619  0.28809524 -0.03571429 -1.10000000  0.03095238
## [7] -0.38809524 -0.35238095
```

The result of Q2(4) is same as Q1(4)

5.

```
Box.test(x.yw$resid, lag = 2, type = c("Ljung-Box"), fitdf = 1)
```

```
##
##  Box-Ljung test
##
## data:  x.yw$resid
## X-squared = 1.0924, df = 1, p-value = 0.2959
```

The p-value is 0.2959 which is greater than 0.05, so we fail to reject H0. The result of Q2(5) is same as Q1(5)

6 & 7

```
library("forecast")
```

```
## Registered S3 method overwritten by 'quantmod':
##   method            from
##   as.zoo.data.frame zoo
```

```
forecast(x.yw, level= 0.95, h=2)
```

```
##    Point Forecast     Lo 95    Hi 95
##  9   -0.047619048 -1.675781 1.580543
## 10   -0.005668934 -1.645328 1.633990
```

The result of 6 and 7 are similar to that of Q1.