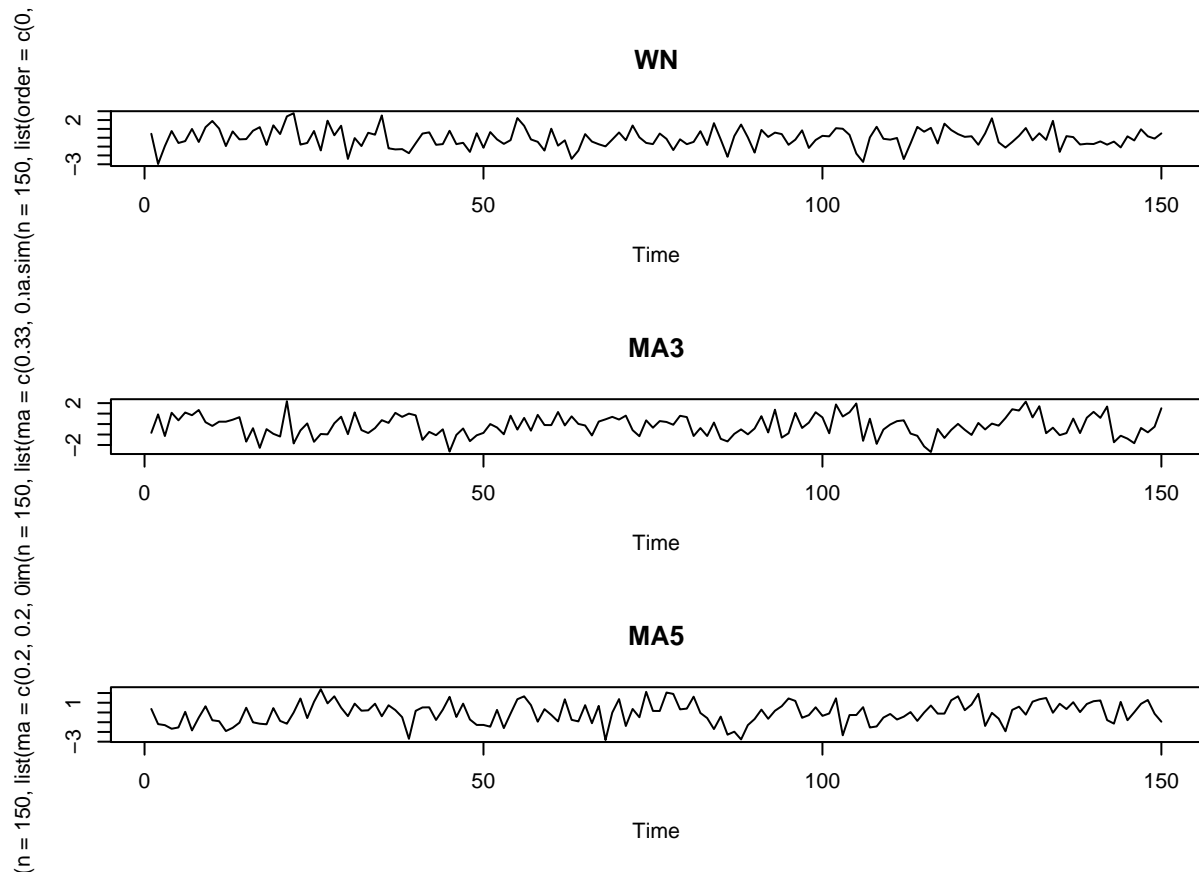


## week-3.R

Ahmed

2023-04-10

```
par( mfrow=c(3,1) );
plot( arima.sim(n=150, list(order=c(0,0,0) ) ), main="WN" );
plot( arima.sim(n=150, list(ma=c(0.33, 0.33, 0.33) ) ), main="MA3");
plot( arima.sim(n=150, list(ma=c(0.2, 0.2, 0.2, 0.2, 0.2) ) ), main="MA5" );
```

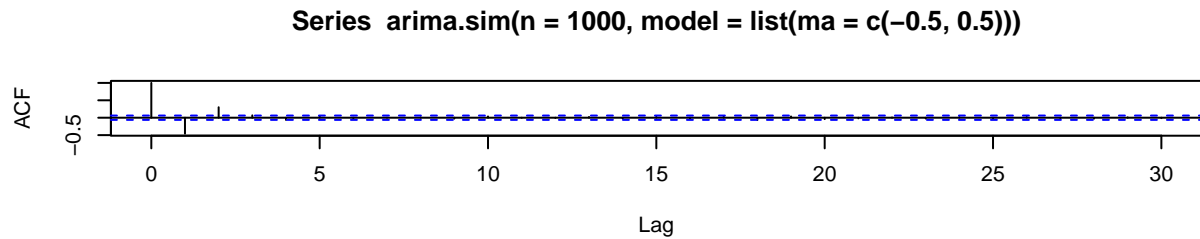


```
set.seed=1
(acf(arima.sim(n=1000, model=list(ma=c(-0.5, 0.5)))))
```

```
##
## Autocorrelations of series 'arima.sim(n = 1000, model = list(ma = c(-0.5, 0.5)))', by lag
##
##      0      1      2      3      4      5      6      7      8      9     10
## 1.000 -0.459  0.301  0.068 -0.065  0.050 -0.021  0.001  0.010 -0.027  0.037
```

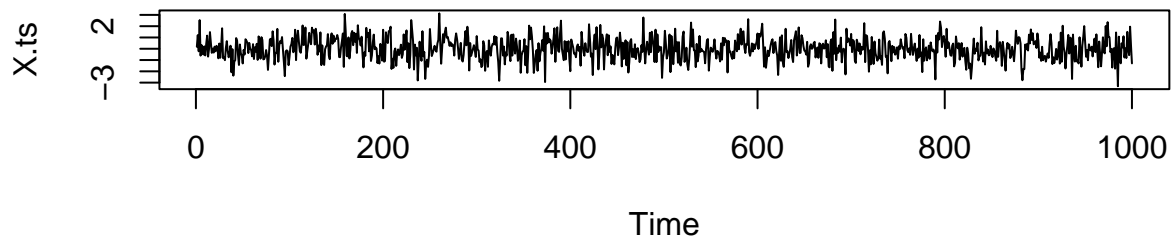
```
##      11      12      13      14      15      16      17      18      19      20      21
## -0.004 -0.008  0.022 -0.022  0.026 -0.039  0.036 -0.069  0.036 -0.040 -0.018
##      22      23      24      25      26      27      28      29      30
##  0.007 -0.024  0.018 -0.027  0.021 -0.016 -0.027  0.010 -0.013
```

```
#AR Simulation
phi1 = .1;
X.ts <- arima.sim(list(ar = c(phi1)), n=1000)
par(mfrow=c(2,1))
```

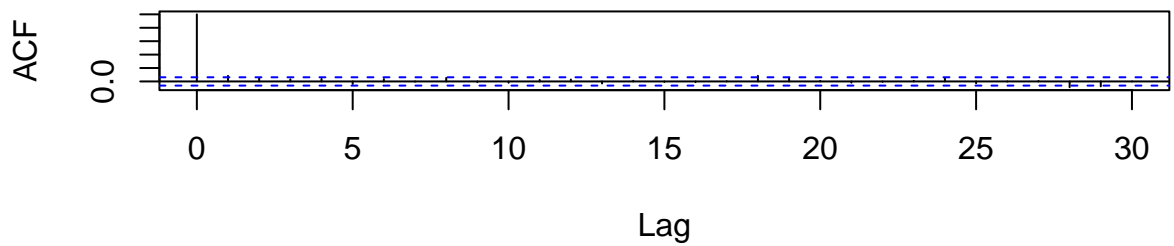


```
plot(X.ts,main=paste("AR(1) Time Series, phi1=",phi1))
X.acf = acf(X.ts, main="Autocorrelation of AR(1) Time Series")
```

### AR(1) Time Series, $\phi_1 = 0.1$

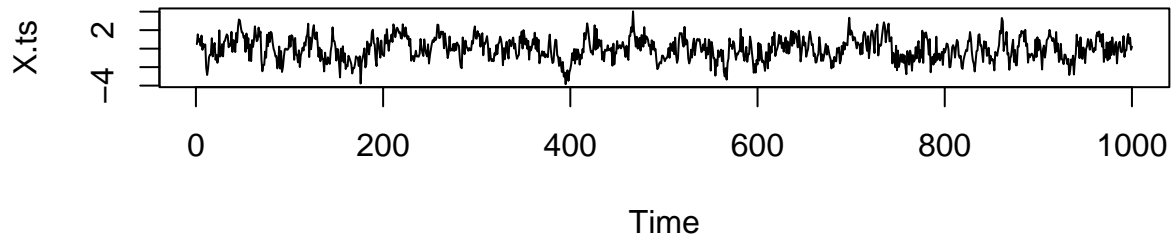


### Autocorrelation of AR(1) Time Series



```
par(mfrow=c(2,1))  
  
phi1 = .4; phi2 = .3;  
X.ts <- arima.sim(list(ar = c(phi1, phi2)), n=1000)  
plot(X.ts,main=paste("AR(2) Time Series, phi1=",phi1,"phi2=",phi2))  
acf(X.ts,main="ACF")
```

### AR(2) Time Series, $\phi_1 = 0.4$ $\phi_2 = 0.3$



### ACF

