```
> hellor <- read.csv("C:/Users/Nirbhay Pherwani/Desktop/ARS.csv")
> attach(hellor)

>
> data<-ts(Billing.Actual,start = c(1,1),frequency = 1)
> par(las=3)
>
> plot(data, xlab="", ylab = "Bolero Sales in Chennai", xaxt="n",col="red")
> axis(1, at=1:12, labels=paste(month.abb,2013,""), cex.axis=0.6)
> axis(1, at=13:24, labels=paste(month.abb,2014,""), cex.axis=0.6)
>
> plot(diff(data),ylab="Differenced Bolero Sales in Chennai", xaxt="n",xlab="",col="red")
> axis(1, at=1:12, labels=paste(month.abb,2013,""), cex.axis=0.6)
> axis(1, at=13:24, labels=paste(month.abb,2014,""), cex.axis=0.6)
>
> plot(log10(data),ylab="Log10(Bolero Sales in Chennai)", xaxt="n",xlab="",col="red")
> axis(1, at=1:12, labels=paste(month.abb,2013,""), cex.axis=0.6)
> axis(1, at=13:24, labels=paste(month.abb,2014,""), cex.axis=0.6)
>
> plot(diff(log10(data)),xlab="",ylab="Differenced Log (Bolero Sales in Chennai)", xaxt="n",col="red")
> axis(1, at=1:12, labels=paste(month.abb,2013,""), cex.axis=0.6)
> axis(1, at=13:24, labels=paste(month.abb,2014,""), cex.axis=0.6)
>
> par(mfrow = c(1,2))
> acf(ts(((data))),main="ACF Bolero Sales in Chennai",col="green")
> pacf(ts(((data))),main="PACF Bolero Sales in Chennai", col="green")
>
> par(mfrow = c(1,1))
> require(forecast)
> AR <- auto.arima((log10(data)), approximation=FALSE,trace=FALSE)
> summary(AR)
Series: (log10(data))
ARIMA(1,1,0)

Coefficients:
          ar1
      -0.5972
s.e.   0.1927

sigma^2 estimated as 0.0122:  log likelihood=17.81
AIC=-31.62   AICc=-31.02   BIC=-29.35

Training set error measures:
                      ME      RMSE        MAE       MPE     MAPE      MASE
Training set -0.02134337 0.1081498 0.08229763 -1.043319 3.503696 0.8851832
                    ACF1
Training set -0.09808722
> par(bg = "white")
> pred <- predict(AR, n.ahead = 5)
> pred
$pred
Time Series:
Start = 25
End = 29
Frequency = 1
[1] 2.171930 2.287528 2.218490 2.259721 2.235097

$se
Time Series:
Start = 25
End = 29
Frequency = 1
[1] 0.1104746 0.1190990 0.1456840 0.1576960 0.1743749
```

```
> pred$pred
Time Series:
Start = 25
End = 29
Frequency = 1
[1] 2.171930 2.287528 2.218490 2.259721 2.235097
> plot(data,col="red",xlim=c(1,32),ylim=c(1,600),xaxt="n" ,xlab = "",ylab = "Bolero Sales in Chennai",
main="Bolero Sales Forecast for 2015 in Chennai")
> lines(10^(pred$pred),col="blue" ,xaxt="n")
> #lines(10^(pred$pred+2*pred$se),col="green")
> #lines(10^(pred$pred-2*pred$se),col="green")
> par(las=3)
> axis(1, at=1:12, labels=paste(month.abb,2013,""), cex.axis=0.6)
> axis(1, at=13:24, labels=paste(month.abb,2014,""), cex.axis=0.6)
> axis(1, at=25:36, labels=paste(month.abb,2015,""), cex.axis=0.6)
> #Only the Predicted Plot
> plot(10^(pred$pred),col="blue" ,xaxt="n", xlab="",ylab="Bolero Sales in Chennai",main="Bolero Sales
Forecast for 2015 in Chennai")
> axis(1, at=25:36, labels=paste(month.abb,2015,""), cex.axis=0.6)
>
```