**R-Code:**

library("TTR")

library("forecast")

weatherdata<-read.csv("D:\\VIT\\MAHAVIR\\weather.csv")

weatherdata

colnames(weatherdata)

# --------For Mean Temperature--------

# Forecast using Simple Moving Average(SMA)

mtemptimeseries<-ts(weatherdata$meantemp,frequency=12,start = c(2010))

mtemptimeseries

plot.ts(mtemptimeseries)

mtemptsSMA<-SMA(mtemptimeseries,n=3)

mtemptsSMA

plot.ts(mtemptsSMA)

newtempts=cbind(mtemptimeseries,mtemptsSMA)

newtempts

plot(mtemptimeseries,col='red')

lines(mtemptsSMA,col='blue')

mtemptseriescomp<-decompose(mtemptimeseries)

mtemptseriescomp$seasonal

plot(mtemptseriescomp)

# Forecast using Exponential Smoothing Method

mtempseriesforecast<-HoltWinters(mtemptimeseries)

mtempseriesforecast

mtempseriesforecast$fitted

plot(mtempseriesforecast)

mtempseriesforecast$SSE

HoltWinters(mtemptimeseries,l.start=15.91304348)

mtempseriesforecast2<-forecast:::forecast.HoltWinters(mtempseriesforecast,h=24)

mtempseriesforecast2

plot(mtempseriesforecast2)

# --------For Humidity--------

# Forecast using Simple Moving Average(SMA)

humiditytimeseries<-ts(weatherdata$humidity,frequency=12,start = c(2010))

humiditytimeseries

plot.ts(humiditytimeseries)

humiditytsSMA<-SMA(humiditytimeseries,n=3)

humiditytsSMA

plot.ts(humiditytsSMA)

newhumidityts=cbind(humiditytimeseries,humiditytsSMA)

newhumidityts

plot(humiditytimeseries,col='red')

lines(humiditytsSMA,col='blue')

humtseriescomp<-decompose(humiditytimeseries)

humtseriescomp$seasonal

plot(humtseriescomp)

# Forecast using Exponential Smoothing Method

humidityseriesforecast<-HoltWinters(humiditytimeseries)

humidityseriesforecast

humidityseriesforecast$fitted

plot(humidityseriesforecast)

humidityseriesforecast$SSE

HoltWinters(humiditytimeseries,l.start=85.86956522)

humidityseriesforecast2<-forecast:::forecast.HoltWinters(humidityseriesforecast,h=24)

humidityseriesforecast2

plot(humidityseriesforecast2)

# --------For WindSpeed--------

# Forecast using Simple Moving Average(SMA)

windspeedtimeseries<-ts(weatherdata$windspeed,frequency=12,start = c(2010))

windspeedtimeseries

plot.ts(windspeedtimeseries)

windspeedtsSMA<-SMA(windspeedtimeseries,n=3)

windspeedtsSMA

plot.ts(windspeedtsSMA)

newwindspeedts=cbind(windspeedtimeseries,windspeedtsSMA)

newwindspeedts

plot(windspeedtimeseries,col='red')

lines(windspeedtsSMA,col='blue')

windspeedtseriescomp<-decompose(windspeedtimeseries)

windspeedtseriescomp$seasonal

plot(windspeedtseriescomp)

# Forecast using Exponential Smoothing Method

windspeedseriesforecast<-HoltWinters(windspeedtimeseries)

windspeedseriesforecast

windspeedseriesforecast$fitted

plot(windspeedseriesforecast)

windspeedseriesforecast$SSE

HoltWinters(windspeedtimeseries,l.start=2.743478261)

windspeedseriesforecast2<-forecast:::forecast.HoltWinters(windspeedseriesforecast,h=24)

windspeedseriesforecast2

plot(windspeedseriesforecast2)

# --------For MeanPressure--------

# Forecast using Simple Moving Average(SMA)

mpressuretimeseries<-ts(weatherdata$meanpressure,frequency=12,start = c(2010))

mpressuretimeseries

plot.ts(mpressuretimeseries)

mpressuretsSMA<-SMA(mpressuretimeseries,n=3)

mpressuretsSMA

plot.ts(mpressuretsSMA)

newpressurets=cbind(mpressuretimeseries,mpressuretsSMA)

newpressurets

plot(mpressuretimeseries,col='red')

lines(mpressuretsSMA,col='blue')

presstseriescomp<-decompose(mpressuretimeseries)

presstseriescomp$seasonal

plot(presstseriescomp)

# Forecast using Exponential Smoothing Method

mpressseriesforecast<-HoltWinters(mpressuretimeseries)

mpressseriesforecast

mpressseriesforecast$fitted

plot(mpressseriesforecast)

mpressseriesforecast$SSE

HoltWinters(mpressuretimeseries,l.start=59)

mpressseriesforecast2<-forecast:::forecast.HoltWinters(mpressseriesforecast,h=24)

mpressseriesforecast2

plot(mpressseriesforecast2)