STA 3180 Statistical Modelling: Forecasting

1. Given a time series of monthly sales data, use exponential smoothing to forecast the next three months of sales.

Solution: Use the exponential smoothing formula to calculate the smoothed values for each month in the time series. Then use the last smoothed value as the forecast for the next three months.

2. Use a linear regression model to forecast the demand for a product over the next six months.

Solution: Fit a linear regression model using the historical data for the product. Use the fitted model to predict the demand for the next six months.

3. Use a Box-Jenkins ARIMA model to forecast the number of visitors to a website over the next 12 months.

Solution: Fit an ARIMA model to the historical data for the website visitors. Use the fitted model to predict the number of visitors for the next 12 months.

4. Use a Holt-Winters seasonal model to forecast the number of airline passengers over the next six months.

Solution: Fit a Holt-Winters seasonal model to the historical data for the airline passengers. Use the fitted model to predict the number of passengers for the next six months.

5. Use a neural network to forecast the stock price of a company over the next three months.

Solution: Fit a neural network model to the historical data for the stock price. Use the fitted model to predict the stock price for the next three months.