STAT 443: Time Series and Forecasting

Lab 6: Model building using $ARIMA(p, d, q)$ processes - Part I

- The lab must be completed in `R Markdown`. Display all the `R` code used to perform your analysis.
- Create a pdf or html file and use it as your lab submission.
- Please ensure that the file you submit is in good order (e.g., not corrupted and contains the work you intend to submit). No late (re-)submissions will be accepted.

The dataset `TempPG.csv` includes minimum temperatures measured at Prince George, BC, from 1919 to 2008. Read the data into R using either `read.table()` or `read.csv()` commands.

1. The column labelled "Annual" includes the annual minimum temperatures. Extract those data, and coerce them into a time series object. Plot the time series, its acf and pacf. Comment on what you observe. If you were to fit an ARMA model to the above data, which would you select?
2. Fit the ARMA model you proposed above using the `arima()` command. Write down your fitted model.

   Note that in the output of the `arima` command, 'intercept' refers to the mean of the process, which we denote by μ in class.
3. Use the `confint()` command to find 95% confidence intervals for relevant parameters.
4. Use the `tsdiag()` function to see diagnostic plots for the model you have fitted. Comment on each plot. How well does the model you proposed appear to fit?