Problem Set #4

Anaya Hall & Christian Miller

Due April 25th

Serial Correlation

The goal of this problem set is to explore what happens when we have *serially correlated distrubances*.

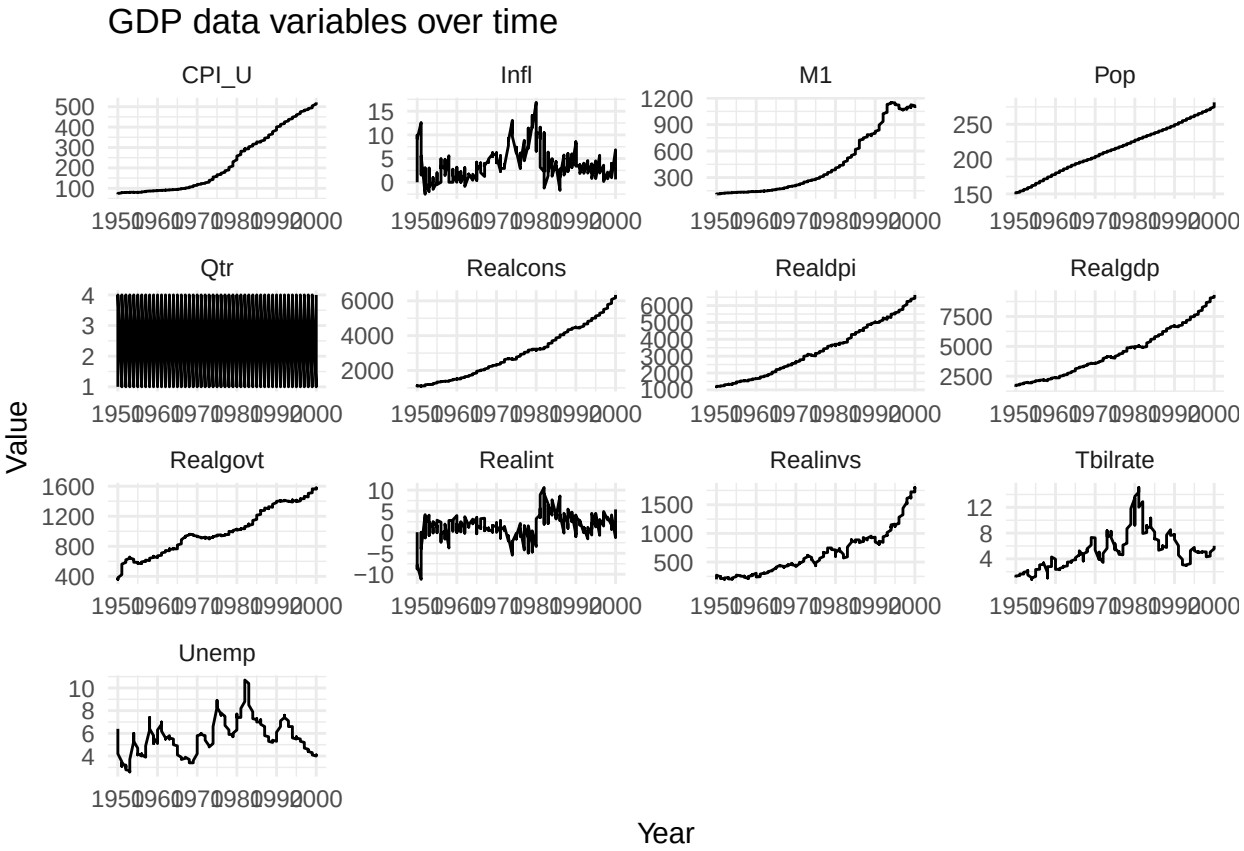
Question 1:

Read the data into R. Plot the series against time and make sure your data are read in correctly. Also, print out data as ascii file and compare the first and last row to make sure there's no funny business with how the data were read in. Check a few points in the middle too.

```
# Column names from codebook
names <- c("Year", "Qtr", "Realgdp", "Realcons", "Realinvs", "Realgovt", "Realdpi", "CPI_U", "M1",

# Read in txt file as data.frame using column names from codebook
gdp_data <- readr::read_table2("data.txt",
                               col_names = names)
```

```
#Plot the variables in our model against time
ggplot(data = gather(gdp_data, key, value, -Year), aes(x = Year, y = value)) +
  geom_line() +
  facet_wrap(~ key, scales = "free") +
  ggtitle("GDP data variables over time") +
  ylab("Value") +
  xlab("Year") + theme_minimal()
```




```
write.table(x = gdp_data, file = "test_ascii")

# ascii(x = gdp_data, include.rownames = T)
```

So far, everthing looks good.

Question 2: Phillips Curve

Estimate the estimations augmented Phillips Curve (see Greene p. 251)

Equation:

$\Delta p_t - \Delta p_{t-1} = \beta_1 + \beta_2 \cdot u_t + \epsilon_t$

(a) Generate dependent variable

Hint: Check the codebook; may need to drop one of our variables.

Need to drop the first row because the first observation for Infl is missing Phillip's curve regresses inflation (%) on unemployment (%)

```
# Generate Dependent Variable
for (i in 1:nrow(gdp_data)) {
                        if (i==1)
                        gdp_data$delta_p[i] = NA
                        else
                          gdp_data$delta_p[i] = gdp_data$Infl[i] - gdp_data$Infl[i-1] }
```

```
## Warning: Unknown or uninitialised column: 'delta_p'.
```

```
# Drop first observation (row)
gdp_data <- gdp_data[-1,]
```

(b)

-FUNCTIONS-