Introduction

This assignment uses data from the UC Irvine Machine Learning Repository, a popular repository for machine learning datasets. In particular, we will be using the "Individual household electric power consumption Data Set" which I have made available on the course web site:

- **Dataset**: Electric power consumption [20Mb]
- **Description**: Measurements of electric power consumption in one household with a one-minute sampling rate over a period of almost 4 years. Different electrical quantities and some sub-metering values are available.

The following descriptions of the 9 variables in the dataset are taken from the UCI web site:

1. **Date**: Date in format dd/mm/yyyy
2. **Time**: time in format hh:mm:ss
3. **Global_active_power**: household global minute-averaged active power (in kilowatt)
4. **Global_reactive_power**: household global minute-averaged reactive power (in kilowatt)
5. **Voltage**: minute-averaged voltage (in volt)
6. **Global_intensity**: household global minute-averaged current intensity (in ampere)
7. **Sub_metering_1**: energy sub-metering No. 1 (in watt-hour of active energy). It corresponds to the kitchen, containing mainly a dishwasher, an oven and a microwave (hot plates are not electric but gas powered).
8. **Sub_metering_2**: energy sub-metering No. 2 (in watt-hour of active energy). It corresponds to the laundry room, containing a washing-machine, a tumble-drier, a refrigerator and a light.
9. **Sub_metering_3**: energy sub-metering No. 3 (in watt-hour of active energy). It corresponds to an electric water-heater and an air-conditioner.

Loading the data

When loading the dataset into R, please consider the following:

- The dataset has 2,075,259 rows and 9 columns. First calculate a rough estimate of how much memory the dataset will require in memory before reading into R. Make sure your computer has enough memory (most modern computers should be fine).
- We will only be using data from the dates 2007-02-01 and 2007-02-02. One alternative is to read the data from just those dates rather than reading in the entire dataset and subsetting to those dates.
- You may find it useful to convert the Date and Time variables to Date/Time classes in R using the `strptime()` and `as.Date()` functions.
- Note that in this dataset missing values are coded as `?`.

Making Plots

Our overall goal here is simply to examine how household energy usage varies over a 2-day period in February, 2007. Your task is to reconstruct the following plots below, all of which were constructed using the base plotting system.

For each plot you should

- Construct the plot and save it to a PNG file with a width of 480 pixels and a height of 480 pixels.
- Name each of the plot files as `plot1.png`, `plot2.png`, etc.
- Create a separate R code file (`plot1.R`, `plot2.R`, etc.) that constructs the corresponding plot, i.e. code in `plot1.R` constructs the `plot1.png` plot. Your code file **should include code for reading the data** so that the plot can be fully reproduced. You must also include the code that creates the PNG file.
- Add the PNG file and R code file to the top-level folder of your git repository (no need for separate sub-folders)

Keep in mind this course is about exploratory graphs, understanding the data, and developing strategies. Here's a good quote from a swirl lesson about exploratory graphs: *"They help us find patterns in data and understand its properties. They suggest modeling strategies and help to debug analyses. We DON'T use exploratory graphs to communicate results."*