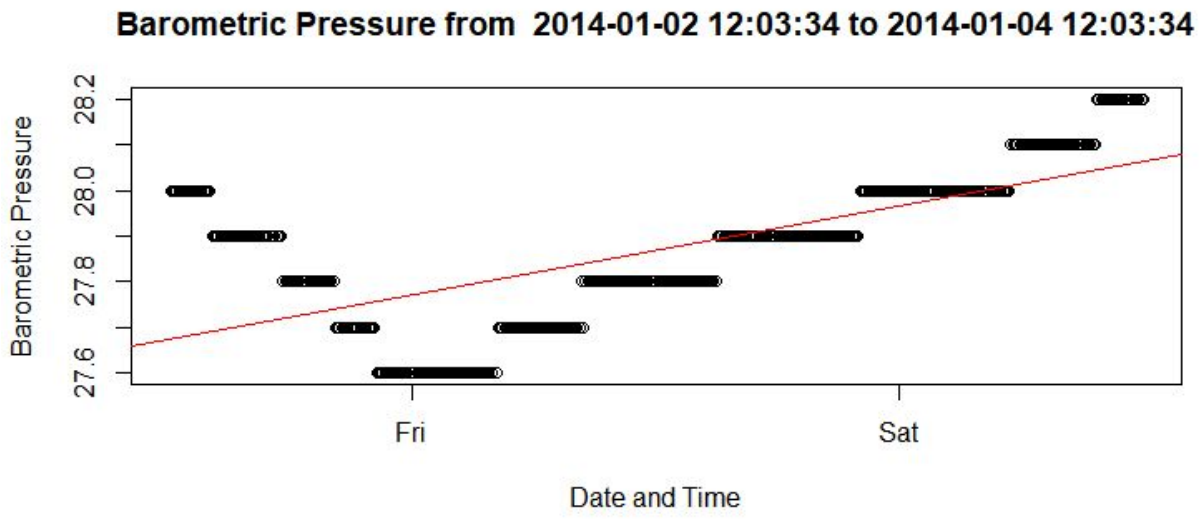
Solving Real World Problems with R

Statistics: Barometric Pressure

Problem Statement: Write a function that accepts a beginning date, time and an ending date, time to return the coefficient of the slope of the barometric pressure.

We will be using **library(magrittr)** and **library(lubridate)** for this solution.
Steps involved in the solution:

1. Import the file from lynda.com and confirm if the import has taken place.
2. Calculate the coefficient of Barometer Pressure
3. Helper function to get a subset of LPO weather data.
4. Graph the Barometric pressure

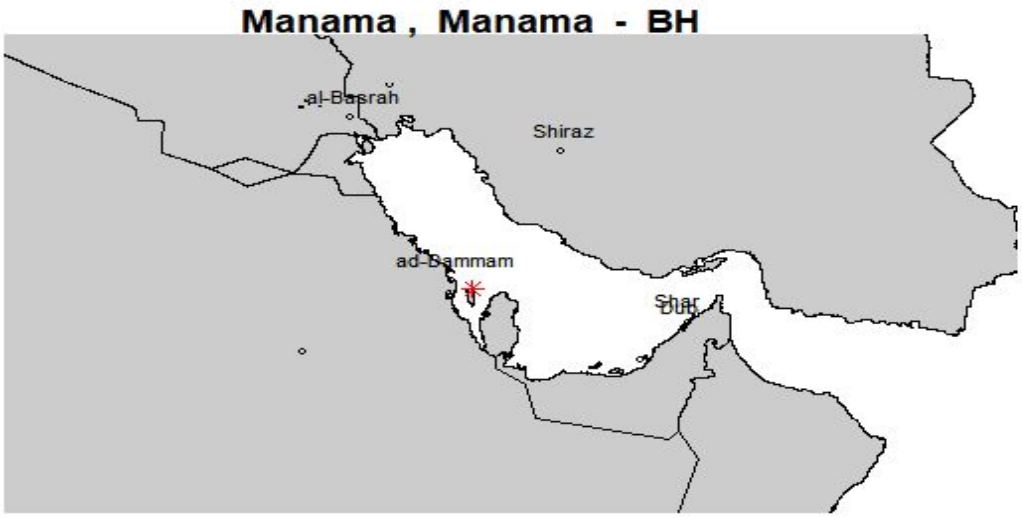


Geo location application: Where am I?

Problem Statement: Should show the geolocation of where you are running your application from, inclusive of longitude, latitude and location as well as an indicator as to how accurate the location is.

We will be using **library(rjson), library(maps)** and **library(mapdata)** for this solution. Steps involved in the solution:

1. Getting the geolocation
   IP address, Geostring, location, latitude, longitude
2. Map the location



The Eight Queen Problem

Problem Statement: Place the eight queens in such a manner that none can attack each other.

A little research into the problem we can see that there are 92 solutions. We will be using **library(combinat)** for this solution. Steps involved in the solution:

1. Initiate the test values
2. Solve the column and row conflict separately
   Vectors for rows and permn() for columns
3. Find the diagonal conflicts
4. Build a table containing all possible iterations
5. Plot the interactive solution solutions

5 1 4 6 8 2 7 3

4 8 1 5 7 2 6 3

6 4 7 1 8 2 5 3

6 4 7 1 3 5 2 8

(Interactive solution)

Accessing Peripherals: Build a Medical Instrument

Problem Statement: Create a program that converts mouse movements into musical pitches. The instrument should be silent until one of the mouse buttons is held down. Moving it up and down should change the pitch and move it to side to side should alter the volume. Let go of the mouse button and the musical tone stops.

We will be using **library(tcltk), library(sonify)** for this solution. Steps involved in the solution:

1. Initialize the tcl/tk
2. Play the sound function
3. Start the theremin

(Interactive music)

Machine Learning: Facial Recognition

Problem Statement: Use Microsoft cognitive services to recognize faces in an image.

We will be using **library(rjson), library(httr), library(imager)** for this solution. Steps involved in the solution:

1. Configure the web API
2. Recognize the faces
3. Displaying the image with boxes
4. Saving plot to the disk file
5. Returning the face count