Particular Presence Technologies

Technical Evaluation

Lomar Lilly

Submitted: 17/03/2017

Problem Statement

Technical Test

Krace Gennedy has an employee workforce of 500 (200 in Mobay, 300 in Kingston) manufacturing workers. The boss man has realized that when it rains productivity is generally low for the following reasons:

- People don't show up for work
- People get to work late

The IT guys work on the street so they tend to get stuck a lot on the road, thus halting other things. There is a structure (db/file/something) with all the workers, the structure contains name, address1, city, country, telephoneNo, role, email.

The boss has the following criteria:

- If it’s going to be a rainy day he sends a notification to affected employees (i.e. his city) with a schedule change - effectively, they're only working 4 hours today and not the usual 8 hours
- If it’s sunny then an email is sent to the employee to let them know they're scheduled for 8 hours tomorrow
- If it's going to rain any day then the IT personnel should get an email from the boss explaining that they shouldn't hit the streets

The boss enjoys DVM weather forecast with Martia-May Levans in the evenings but sometimes he doesn't catch it and is unable to send notifications are required.

The boss has asked you to build an application that will check the weather forecast for the next 5 days and automate the sending of emails out to staff. You can create a structure and put some forecast data or pull it from an external source such as http://openweathermap.org/A PI. Use your discretion.

Solution

Technologies Used

The following technologies were used to complete this assignment:

- Python 3.4
- SQLite
- SQLite Manager
- BeautifulSoup
- Texttable

Weather Data Source

The following are the sources from which this solution drew its data.

- *http://www.metservice.gov.jm/*
- *http://jaweather.com*
- *http://jamaica.weatherproof.fi/glenroy/weather/jaweather.php*

About The Solution

In this solution, because the nature of the requirements, I decided to use a local weather source instead of one that is not (Open Weather Map).

The local source I decided to use was the Meteorological Service Of Jamaica. I have however created a sample solution using a weather API from Open Weather Map.

I did some research on how I could easily get the weather forecast from the Meteorological Service of Jamaica and came across a website called Jamaica Weather. Jamaica Weather Report is an established web site that targets internet audience both locally and abroad who are seeking weather related information about the island of Jamaica.

The solution was done in Python and an object orient approach was used. Three classes were implemented:

1. Database Class
2. Forecaster Class
3. Driver Class

The Database Class

The Database Class contains all the methods used to access and update the database. SQLite was the database implemented in this solution as it the easiest implementation of a database Python; however, if I wanted to use another database be it My-SQL, Postgresql, MS-SQL, Oracle etc. I could use SQLAlchemy which is a python library used to connect python to other databases.

The Forecaster Class

The Forecaster Class contains all the methods needed to send emails to employees, to get the weather forecast from the source, parse it and send the data over to the database class to perform a specific operation. This class parses data from the database as well to make the data more human readable, this you'll see in the source code where the forecaster class requests the rain fall values and wind speed values from the database and converts the numerical values received into text values, making it more understandable.

The Driver Class

The Driver Class contains the main function which access methods from the forecaster class. It is in this class you deicide the following:

1. Which City Weather Forecast should I get (Kingston or Montego Bay)
2. Whether to display the forecast on screen or not.
3. What to do if it will rain the next day in a particular city.
4. The E-Mail Subject.
5. Who to send the emails to (employees not including IT staff / employees including IT staff / just the IT staff)

Class Flow Diagram

The diagram below shows how the classes interacts with each other.

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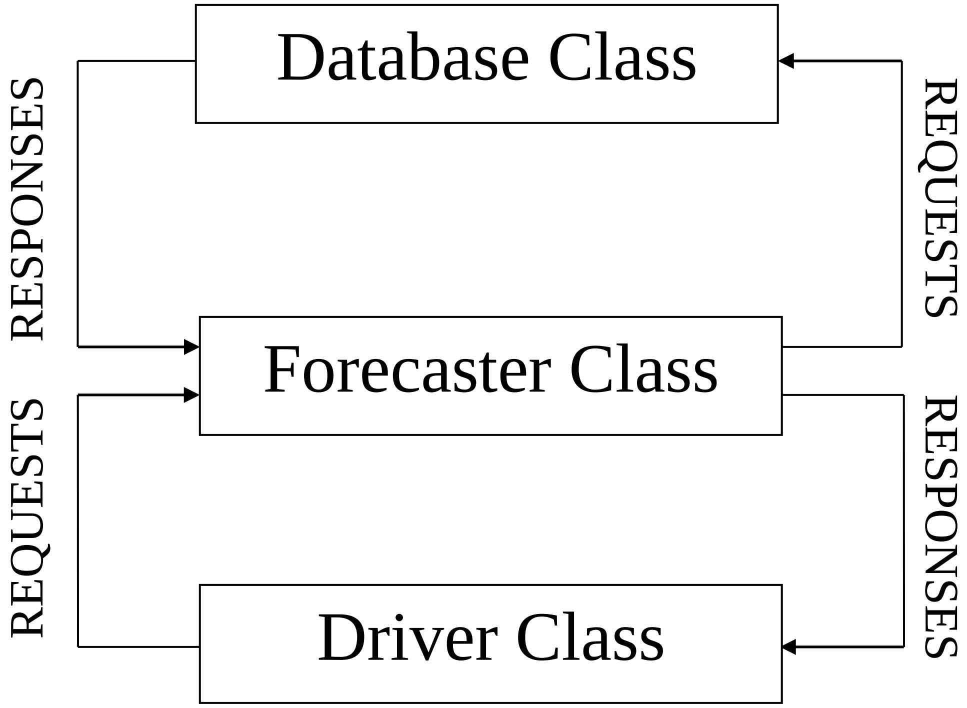

As shown the diagram above, the driver class makes requests to the forecaster class, then makes requests (if necessary) to the database class, which responds to the forecaster class requests, which then responds to the driver class requests.