# CA-675: Assignment-2 Report

## Project Name: WebApp for displaying average rent in Dublin

Team Members:

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Professor:

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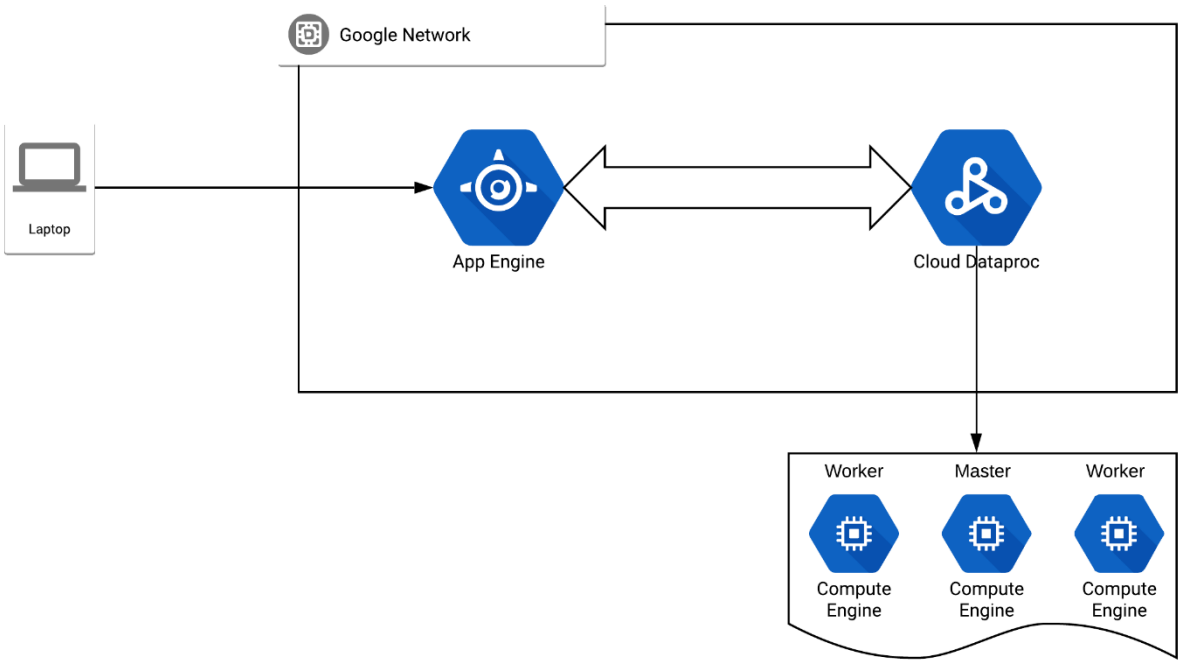
# Project Abstract

Finding affordable Rental Accommodation in Dublin is a very difficult, time-consuming and tiresome task. There are many websites like Daft.ie, Rent.ie, a new innovative site Roomigo.io and many more which help people find accommodation based on their requirements. Before looking for rental properties on website like daft.ie, user must decide the area in which he is looking to stay. To help user make this decision, we have developed a website which would show average monthly rent across postal districts of Dublin (e.g. Dublin 1, Dublin 9, etc.) and would predict the future monthly rent based on the data already available. The website is hosted on GCP (Google Cloud Platform) and the rental data has been taken from daft.ie.

# Architecture Diagram



## Code Repo

https://gitlab.computing.dcu.ie/sawalap2/ca675-assignment2

## Demo Video

https://youtu.be/uKpgABpfDKo

# FrontEnd Setup

## Technologies Used:

- Language: NodeJS, HTML, CSS and JavaScript
- The frontend is developed in HTML, CSS and JS. NodeJS and ExpressJS is used as a backend for frontend (BFF).
- ExpressJS is used as the server framework for NodeJS.
- EJS is used as a templating language to generate HTML markup with plain JS.
- PM2 is used as a process manager which allows us to keep the application alive forever.
- GIT is used as a version control system to track the changes in the project.

## Files:

- server.js is the main file that handles HTTP requests and gives the response back to the HTML template. It also does the URL resolution and defines the server port and hostname.
- package.json defines the project requirements like dependencies, git repository, license and description.
- .env defines environment variables used in the project like port, API URL, etc.

## Deployment:

- Google Cloud CLI (gcloud) is used to deploy the frontend on Google App Engine.
- app.yaml - defines then runtime environment and the configuration of the machine to be used.

# BackEnd Setup

## Technologies Used:

- Language: Java, SpringBoot, R, Hive.
- Google Cloud Dataproc Cluster is used to deploy the backend Hadoop cluster. The data has been loaded to the Hadoop cluster using Hive.
- A SpringBoot Java API has been developed to fetch the data from Hive Database and transfer it to the node.js frontend. The SpringBoot WAR file is deployed on Dataproc cluster using Apache tomcat.
- Machine Learning has been used show TRENDS of the rent in Dublin for past decade and future rent PREDICTION is performed.

## Files:

- DublinAccomodationApplication.java is the Pojo file that initializes the Java object.
- RestEndpoints.java is main file that creates API and is used for parsing the Hive database output to JSON.
- Application.java is builds the SpringBoot application.

## Deployment:

- Maven is used to build SpringBoot WAR file. (mvn clean, mvn install).
- The WAR file is deployed on Dataproc cluster using Apache Tomcat.
- R language is used to perform Trend analysis and Prediction of the average rent.

# Team Roles and Tasks

- BackEnd Setup: Bhavana Tanpure and Parth Khare - SATISFACTORY
- FrontEnd Setup: Archana Kalapgar, Shivani Firke and Zeeshan Asgar-SATISFACTORY
- Data Collection and Structuring: Siddesh Garsund and Pritish Sharma - SATISFACTORY
- WebApp Deployment and Report: Pawan Sawalani - SATISFACTORY