

Project:

EmployTT

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Abstract

Trinidad and Tobago and other Caribbean countries are not known for their implementations of technology. In fact, these countries are known within the region to be slow movers in the acceptance and implementation of technology. The ICT sector is becoming more popular within Trinidad and Tobago and its residents are becoming more technologically competent. This encourages the tackling of problems using further implementation of technological services that can be adopted to solve them. One such problem is the archaic and time-consuming application process for government jobs. Also, at present, there is no streamlined platform that advertises job vacancies for Ministries, Departments and Agencies (MDAs) of the Government of the Republic of Trinidad and Tobago (GoRTT).

Software engineering practices and activities such as requirements elicitation and stake holder interviews were performed during the development of this product. Testing of the components was performed, and its results were used to tailor the product. The developed solution utilizes various technologies including Amazon Web Services (AWS).

The web application will function for both the “admins” who will post and advertise job listings, and for the target demographic who will be able to browse and apply for the available positions. This designed solution improves the overall process for all users.

Introduction

- Problem Description

The job search process is in itself tedious. MDAs use various platforms to advertise vacancies including, their personal websites (if applicable), social media pages, paying for newspaper advertisements or private job listing/recruitment firms. This means that a person may spend hours searching and applying for various positions. There also runs the risk that a person may not see the posting for a position that they are suitably qualified for.

To develop a solution, it was necessary to understand the current process and the needs and wants of the MDAs and applicants. The proposed solution is therefore important and in demand to make the process simpler and more time and cost effective for all parties.

- Positioning

The problems identified show the redundancy and inefficiency of current operations. The developed solution would eliminate the need for postings of job offers on multiple platforms as there will be one guaranteed hub for all vacancies. The application process is also simplified as the same web application will be used to apply for the jobs listed.

Should the proposed solution not be implemented, the unnecessary costs of promoting content on social media and utilisation of private advertising firms will continue to be incurred. Also, the applicants will continue to be frustrated and confused about where to find listings and how to apply.

- Stakeholder Descriptions

The main stakeholders of this application are the GoRTT and its various MDAs and the job seekers, that being, persons that are suitably qualified and able to work. The job seekers target demographic considered were persons from the ages of sixteen (16) to sixty (60) as the general retirement age in Trinidad and Tobago is typically sixty (60) to sixty-five (65).

- Product Overview

The employTT application provides a software solution which will serve as a paperless, cost effective means for advertising and applying to government jobs. This goal is achieved by enabling MDAs to post and advertise vacancies and allowing persons to create profiles and apply for jobs completely online through the web application.

Suitable Human Resource (HR) personnel will be able to create administrative profiles on the application that will then be verified. Once verified, they will be able to create and customise job posts, edit posts, and generate reports. Job seekers will be able to sign up/login, edit profiles, apply for jobs and upload relevant documents along with applications.

Requirements Specification

- Functional

Functional Requirements

FR1 The application should allow users to sign up and login using manual sign up.

FR2 The application should allow users to link their profile to a LinkedIn account.

FR3 The users should be allowed to upload and attach documents (such as certificates, Resume's Cover Letters, Recommendations, work permits etc.) to support application(s) .

FR4 The users should be alerted using emails and/or push notifications when new job postings are made.

FR5 The administrators should be able to search through the database of candidate resumes.

FR6 The application should generate reports based on administrator selected criteria.

FR7 The application should display all posted jobs.

- Non-functional

1. Secure

1:1 Application should use appropriate security measures to ensure user data is protected.

1:2 Authentication processes should be included to ensure authorised personnel only may create administrative profiles.

2. Maintainable

3. Usable

3:1 Clear and understandable UI

3:2 Appropriate navigation tools.

4. Reliable and Dependable

4:1 Application should be available once device is connected to the internet and should be accessible 24/7

5. Efficient

5:1 Minimal resource footprint (battery power/ Memory capacity)

5:2 Low Latency

5:3 An optimal application load time of 2-3 seconds.

5:4 Information returning speed of 3 seconds.

6. Acceptable

6:1 Achieve heterogeneity; compatible on Android and iOS devices.

6:2 Free web application

● System

System Requirements

The system should allow users (both HR personnel and job seekers) to create accounts/sign up and login.

The system should allow HR personnel to create new job posts.

The system should allow for Customization of Job Description layout by Administrators.

Fields such as Name, Location of job, Salary range, Job Type, Job Title, etc.

The system should allow users to view details pertaining to their profile and edit and update such information.

The system should allow for submission of applications electronically to the jobs repository.

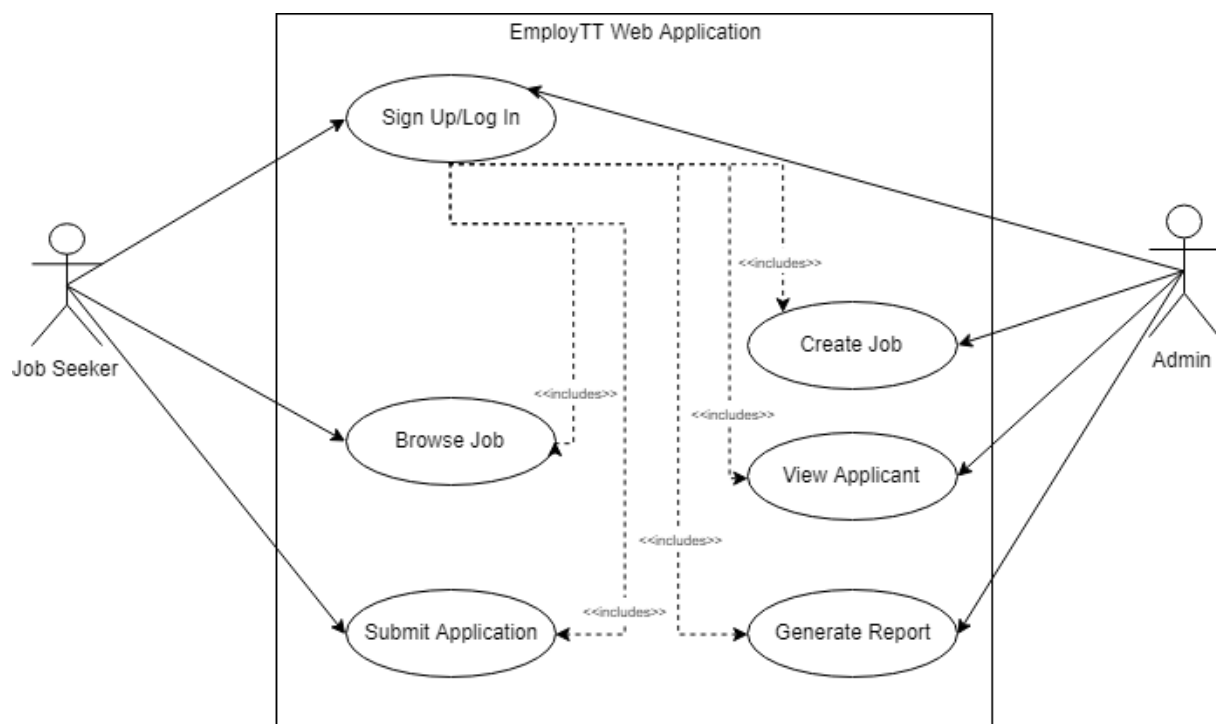
The system should allow for creation of reports on the applications for jobs, number of persons registered, number of CV's uploaded and other metrics.

The system should allow for creation of reports on the applications for jobs, number of persons registered, number of CV's uploaded and other metrics.

The system should allow for searching of Database of Candidate Resumes and creation of reports based on search criteria.

The system should allow for authentication via email, LinkedIn, Facebook, etc..

- Use Case Diagram

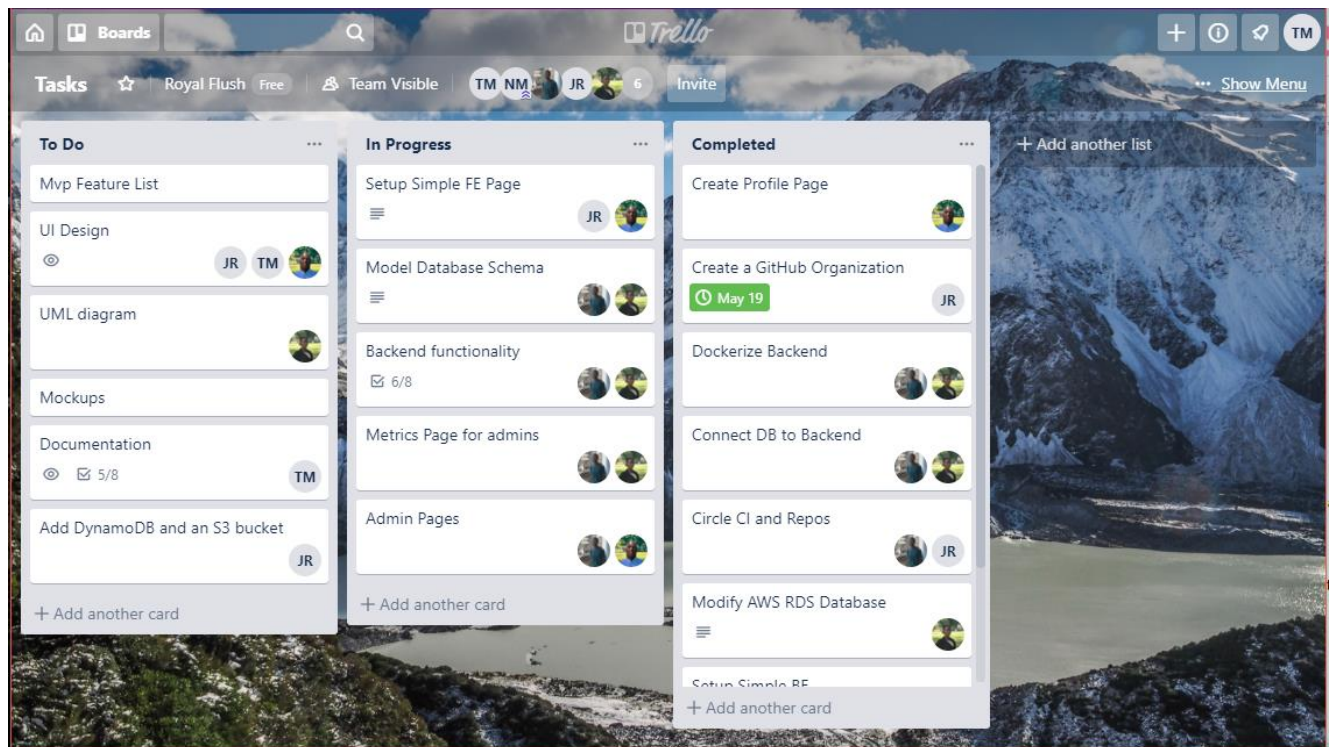


- Technical constraints

For the development of this system, certain considerations and constraints were established so the software development process would be successful.

Due to financial constraints, functionality and services we would have liked to implement such as AWS Cognito for authentication purposes, could not be used. Other features such as machine learning would have been implemented given a sufficient budget and timeline.

Project Management



The purpose of the Gantt chart is to document the timeline of tasks within a project. It is a useful tool in the planning and scheduling of projects. Individual tasks can be viewed along with details of its duration and the sequencing of these tasks. In lieu of a typical Gantt chart, the team chose to use Trello for these purposes.

Implementation

Various technologies were carefully assessed and chosen to be used in the development of our web application.

Programming Languages:

- JavaScript

The Software products used in the application are as follows:

1. Amazon Web Services
2. Nodejs
3. React

Testing

- **Test Plan**

The system will undergo the following levels of testing:

I. Unit Testing: At this stage individual application functions will be analysed and tested separately

II. Integrated Testing: At this stage the functions which make up significant tasks in the application will be grouped together and tested accordingly.

III. System Test: This stage of testing involves analysing and testing the entire system as a complete system.

IV. Acceptance Testing: This will be conducted by deploying the application to a sample size of citizens and HR personnel to get a feel of the application under real world situations. The subjects will give feedback on the efficiency and effectiveness of the application.

The project will be considered a success when the main desired functionalities are working effectively. This refers to the successful creation and posting of jobs, and the successful submission of job applications. Also, additional features such as report generation, and successful searching of database. Moreover, the web application would be considered a clear success once the end user and relevant stakeholders are satisfied with the functions of the system.

Conclusions and Recommendations

The EmployTT web application is in-demand as a software solution to the outdated job advertising and application system in Trinidad and Tobago. The web application which is supported on both Android and iOS devices allows for a completely digital system. This will thereby improve speed of communication and relay of density of information between MDAs and job-seekers. Moreover, the system aims to improve the relationship and transparency between parties involved making for a simple smooth application process. Currently the application successfully meets the desired functional requirements.

Furthermore, the development of this web application was a great hands-on educational exercise for the development team both on an individual and group level.

Amongst these lessons and skills learnt are:

- The importance of task delegation and communication.
- The importance of Software Engineering principles in achieving a good design and development of the product were enforced throughout this process. Skills learnt through our degree aided us in highlighting requirements and feasibilities as well as developing appropriate system diagrams.
- Time management skills were tested and refined as meeting deadlines while ensuring all tasks outlined were completed were a central skill.
- New software development skills were learnt as new platforms and languages were explored in order to complete the project.
- Problem solving skills were further developed and enhanced throughout this process.

- Future Work

Although the system developed met many of the core user and system functions the application can be expanded in Phase 2 to provide users with more features and increase feasibility and functionality. All the requirements that were not met should be implemented

Among these suggested features are:

- Using machine learning to tailor job recommendations to an individual.
- Chat-bot interface to assist users.
- Making the web application accessible to the differently abled using tools such as ARIA