BSc (Hons) Computer Science and Software Engineering

Spices & Vanilla Collector: Web Application for Vanilla Growers Association

REFLECTIVE REPORT

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Unit Name	Undergraduate Project
Unit Code	CIS017-3
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Contents

01. Introduction

1.1. Introduction of report

The reflective report portrays the out-and-out of the project and reflects the ongoing progress of the project. This report contains 3 chapters which mainly reflects the motivations behind choosing this topic along with the errors of the researcher while conducting the project.

1.2. Motivation

I was motivated to choose the agriculture industry because the farmers face different problems when they sell their items. This is an industry-based web development project for the Vanilla Grower Association in Sri Lanka. They grow and collect vanilla and spices such as turmeric, cardamom, cinnamon, cloves, pepper, etc. In this company, there is no way to buy vanilla and spices in wholesale. So, this proposed project helps farmers, to sell their items for this company or any other company. This app can filter the nearest vanilla and spice collecting platforms' location and show those to the farmers, as well as there is an option to view all collection platforms via Google Maps. Using this website farmers can choose suitable company to sell their products. Currently there is no platform to connect wholesale companies and farmers. There is no way to check the quality of products before handing them over to the company so, companies can check product quality easily. I think, spices & Vanilla Collector web application saves employees time and also helps with sustainable organic vanilla cultivation in Sri Lanka. Also, they can export good-quality products to other countries.

1.3. How initiates the project

First, I obtained approval for the proposed application from the lecturer in charge and supervisor. Next, I conducted a meeting with the client to understand the problems they faced. After that, I proposed some functions to address those questions. Following this, I conducted a small research study to assess how extensively this problem has been addressed, identified the current problems farmers face, and determined what additional features I could incorporate into my application to address both farmers' and companies' issues. Subsequently, I conducted an in-depth literature review and market research, which included an online survey about the project. Finally, I identified all the necessary tools, algorithms, and APIs required to implement the system.

1.4. Project Management

Since this is a very large-scale project, it is of utmost importance to complete it successfully. To manage this project, I opted for the agile methodology. To accommodate the given timeframe, I created a Work Breakdown Structure (WBS) which divides the whole project into main tasks and sub tasks. It helped me to identify all the small and big challenges in the project. Then I prepared a Gantt chart which is set with strict deadlines which are set prior to the actual deadline of the artefact submission in-order to make the development process more efficient. Moreover, I utilize a Trello board to track the tasks I am currently working on and review completed tasks.

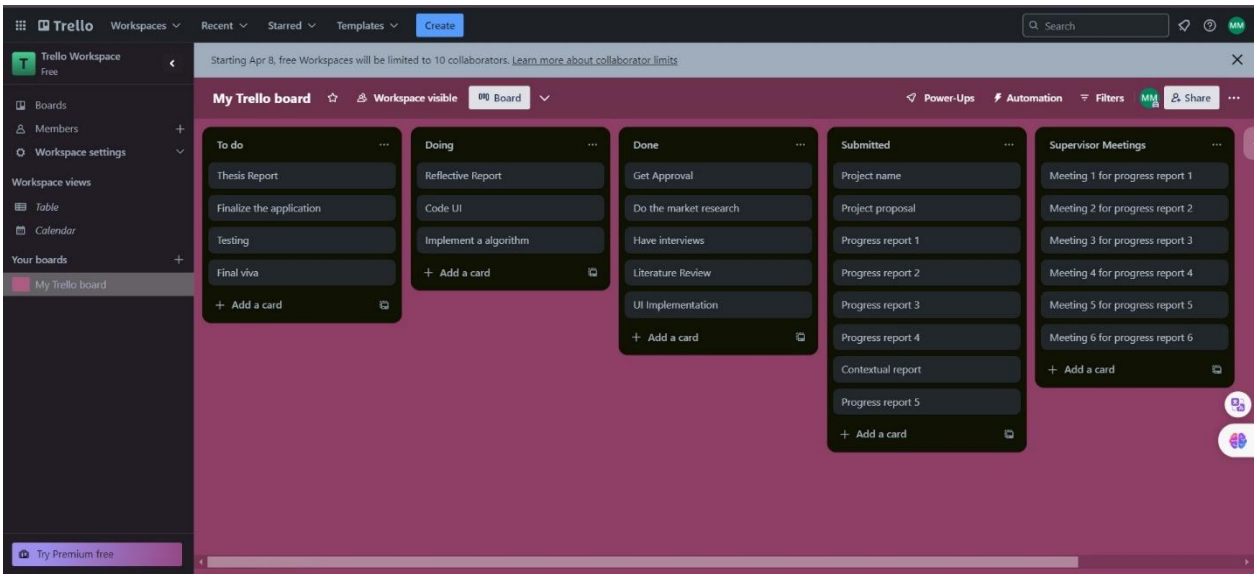


Figure 1: Trello Board Sample

02. Reflection

2.1. Problems, Mistakes and Solutions

As the researcher and developer of this project, I have faced, am currently facing, and may continue to face issues in the future.

Requirement Gathering, Reading and note taking

Before and during my work on this project, I had to gather information as mentioned in the previous section and conduct market research. As a researcher, I encountered many challenges while gathering information for the system.

Problems:

- Send survey to many people because it will lead me to a better application.
- There were different opinions.
- Find a wholesale companies and farmers to do an interview.
- Problems when finding research papers relevant for the research.
- Downloading research papers from commercial web sites.

How I managed:

- Send survey to WhatsApp groups and post the link into social medias.
- Gathered common opinions.
- Contact wholesale companies by social medias.
- Only used recent articles and journals.
- Didn't use much research papers that I downloaded from commercial web sites.

Large scope

The proposed application has a broad scope; for instance, the final product requires farmer profiles, company profiles, real-time camera functionality, a Google Maps option for marking wholesale platforms, and filtering options. Due to this complexity, I may struggle to deliver the entire application within the given timeframe. This is a significant oversight on my part as a researcher.

UI Designing, Image Processing Libraries and Frameworks

I primarily opted for Image Processing techniques and frameworks to develop the proposed application. Therefore, I began studying Image Processing techniques, libraries, and frameworks, as they were unfamiliar to me. However, I did not have enough time in my Gantt chart to fully learn image processing libraries and frameworks, leading to discrepancies in time allocations for tasks. Consequently, I was unable to complete tasks within the allocated time periods and could not implement the application using Image Processing techniques. Since Image Processing techniques are continuously evolving, I had to constantly refer to the latest tutorials, where sometimes the expected information was not available. Considering these challenges, I made the decision to implement the filtering part using PHP, HTML, and JavaScript, as these are familiar languages to me, and I have experience in developing web applications and filtering functions using these techniques.

Time Management and Planning

As a researcher I have scheduled the project according to a Gantt chart. All the documentations and implementation phases are supposed to be done according to the pre-planned schedule. However, there were few setbacks.

- The GUI took time to finalize than expected.
- Some functions didn't work as expected.
- Had to change the Image Processing techniques which resulted a major setback.

Documentation

Documentation is one of the critical things when doing a project. In this project I had to create four major documents along with a monthly progress report. Apart from that I have commented inside the code, which will help me or any third party who will refer the code. As a researcher and developer of this project, I did several mistakes and I had some issues when I am doing documentation.

Problems and mistakes:

- Finding research papers relevant for the research.
- Mistakes in referencing methods.
- Poor time management.
- Major issues with formatting the document with word.

How I managed:

- Referred the most recent articles.
- Used “citeforme.com” and google scholar references.
- Got supervisors advice for searching and selecting research papers.
- Used the university login to download some of the paid research papers from commercial sites.
- Got extra time to do the documentation.
- Update Trello board for every document.

Possible issues in future

The most probable issue I will face in the future is having insufficient time to complete the application. Since I have changed the implementation method, I will need to re-implement functions that I have already worked on, while also managing my upcoming tasks within the limited time available. Additionally, I will need to develop an algorithm to match farmers with suitable companies.

Ways to manage:

- Manage time well.
- When implementing functions that already have done, carefully add it to prevent mistakes.
- Documenting in code which led to find the error easily.

2.2. Changes

I removed some functions that were proposed during the project proposal phase. The "companies can rate the farmer" function was removed due to the project's extensive scope, which required more time to finalize than initially anticipated. Additionally, I implemented a method to filter suitable companies for farmers without relying on image processing. Instead, I used a database filtering method using PHP and HTML.

Reasons that led me to do the above changes:

- Supervisor advices
- Literature review
- Market Research

2.3. Milestone Progress

2.3.1. Milestone 1: Project proposal

In this milestone I Provide an overview of the project, background, Problem Statement, Objectives, Methodology and Scope. This milestone was accomplished prior to establishing a project plan; hence, it neither lagged nor exceeded the schedule.

		Name	Duration	Start	Finish
1		**Spices & Vanilla Collector**	178 days	**10/3/23 8:00 AM**	**6/6/24 5:00 PM**
2		**Planning**	29 days	**10/3/23 8:00 AM**	**11/10/23 5:00 PM**
3		Selecting topic	3 days	10/3/23 8:00 AM	10/5/23 5:00 PM
4		Background research	4 days	10/6/23 8:00 AM	10/11/23 5:00 PM
5		Scope planning	4 days	10/12/23 8:00 AM	10/17/23 5:00 PM
6		Identify the aim and objectives	2 days	10/18/23 8:00 AM	10/19/23 5:00 PM
7		Study on relevant resources	15 days	10/20/23 8:00 AM	11/9/23 5:00 PM
8		Progress report 01	1 day	11/10/23 8:00 AM	11/10/23 5:00 PM
9		Feasibility Analysis	2 days	11/6/23 8:00 AM	11/7/23 5:00 PM
10		**Time planning**	2 days	**11/13/23 8:00 AM**	**11/14/23 5:00 PM**
11		Plan the work breakdown structure	1 day	11/13/23 8:00 AM	11/13/23 5:00 PM
12		Gantt Chart	1 day	11/14/23 8:00 AM	11/14/23 5:00 PM
13		**Requirement Gathering and An**	56 days	**11/15/23 8:00 AM**	**1/31/24 5:00 PM**
14		Market research	16 days	11/15/23 8:00 AM	12/6/23 5:00 PM
15		Gather information for literature re	19 days	12/7/23 8:00 AM	1/2/24 5:00 PM
16		Planning the system requirements	6 days	1/3/24 8:00 AM	1/10/24 5:00 PM
17		Progress report 02	1 day	1/11/24 8:00 AM	1/11/24 5:00 PM
18		Creating literature review	17 days	1/3/24 8:00 AM	1/25/24 5:00 PM
19		Progress report 3	4 days	1/26/24 8:00 AM	1/31/24 5:00 PM
20		**Development**	71 days	**2/1/24 8:00 AM**	**5/9/24 5:00 PM**
21		**Sprint 1**	69 days	**2/1/24 8:00 AM**	**5/7/24 5:00 PM**
22		Design User interfaces	5 days	2/1/24 8:00 AM	2/7/24 5:00 PM
23		Frontend development	4 days	2/8/24 8:00 AM	2/13/24 5:00 PM
24		Design Database	46 days	2/14/24 8:00 AM	4/17/24 5:00 PM
25		Validations / authentications	5 days	4/18/24 8:00 AM	4/24/24 5:00 PM
26		Progress report 4	4 days	4/25/24 8:00 AM	4/30/24 5:00 PM
27		Testing	5 days	5/1/24 8:00 AM	5/7/24 5:00 PM

Figure 2: Milestone Progress

2.3.2 Milestone 2: Market research

This survey is to gather feedback on the vanilla and spices collecting app experience form farmers. The questionnaire was created through “Google Forms” and it was done by the farmers and This milestone is currently completed but there is possibility it will be reviewed and updated at a later date.

2.3.3 Milestone 3: Literature review

In this section discuss of related sections of the proposed system with Journal Articles and Research Papers. Also, latest technologies/approaches/ libraries/similar applications and their benefits and disadvantages. This milestone is currently completed but it is possible that additional research papers may surface later in the project, necessitating further review.

2.3.4 Milestone 4: Planning the artefact

In here identify and define the key artefacts, deliverables. Also, this section provided an explanation of the process involved in creating the artefact and provided specific details regarding its design requirements. This milestone is currently completed.

2.3.5 Milestone 5: Implementation

This is the core activity where start building the actual artefact or system based on the project requirements and design specifications. Currently working on this section.

2.3.6 Milestone 6: Testing

Implementation phase has not been finalized. Once the implementation is finished, a test plan will be created and this milestone will be started.

(Hicks, n.d.)

2.4. Current status

So far, 2 main steps of planning, requirement gathering and analysis have been completed. Currently work on development phase. So, I developed all the UIs.
These UI have been attached in the Appendix.

2.5. Future Work

I am currently developing algorithms to match farmers with suitable companies, and I plan to complete these algorithms and integrate them into the project. After implementing the application, I will conduct thorough testing of each component using the methodology I selected. Once unit testing is successful, I will proceed with integration and system testing. Upon successful completion of acceptance testing, the fully developed application will be presented to the general public to gather feedback. Additionally, I will need to finalize the Thesis report for the project as part of the documentation process.

2.6. Lessons Learned

What I Learned

This is my first large-scale project, as most of my previous projects during my time at university were group work, where I collaborated with friends and divided tasks accordingly. As both a researcher and a developer, I have learned many valuable lessons throughout this project. Primarily, I have gained insights into project management, proper research techniques such as literature review and market research, and the importance of thorough documentation for a project.

From a development standpoint, I have acquired knowledge about new frameworks and languages, and I have enhanced my proficiency in the PHP language. Additionally, I have learned how to utilize Google APIs, develop algorithms, and improve my skills in designing user interfaces. This project has been instrumental in expanding my knowledge and skills across various aspects of project development and execution.

If I Got a Second Chance

As a novice researcher and developer, the project did not turn out as successful as I had anticipated. Given a second chance, I would reduce the scope of the project and concentrate on selecting the most suitable technique for the application.

2.7. Good practices

At the beginning of the project, there was no idea about the Image processing techniques. So, followed an Image processing techniques course to learn Image processing techniques. Learned more about JavaScript in web applications and read the necessary document for that. In addition, watch the related YouTube video to learn more. It was also possible to gain experience in project management and learn about time management.

03. Thesis Content

Title page

This is the first page of the document. This will include the name and the logo of the university, name of the submission, student ID, Student Name and date of submission.

Abstract

This will include a summary of the entire document so the reader can get a brief idea about the overall project and document. Also, it includes why the project was carried out, how the project was executed, the findings of the report, and the significance of these findings within the project.

Acknowledgments

This will include a vote of thanks for everyone who helped to make this project a success.

Chapters

Chapter 1: Introduction

The chapter will have a review on the history of the project and an introduction on the priorities and goals of the artefact development. Further, a brief introduction of the main ideology of the project will be given in this section where the main ideology of the artefact is provided for the better understanding of the reader.

1.1.Project Background

This section will explain the motivation behind the project

1.2.Aim and Objectives

All aims and objectives of the project are included here

1.3.Description of the Artefact

This showcases the functions and scope of the developed system

1.4.Structure of the report

Chapter 2: Literature review
In this section, the Spices & Vanilla Collector project aims to provide a comprehensive understanding of the existing research, technologies, and methodologies relevant to Spices & Vanilla Collection and related fields. This section serves as a foundation for the project by offering insights into prior work, identifying gaps in knowledge or technology, and informing the project's approach and methodology. I will review various literature reviews conducted by different researchers and discuss relevant sections of the proposed system using journal articles and research papers. Additionally, this chapter will cover the latest technologies, approaches, libraries, and similar applications, including an introduction and discussion of relevant technologies and research gaps.

Chapter 3: Market research
The market research shows the responses and ideas of the general public about the proposed system. Why it is important to develop such an application? Also making sure that the project does not already exist and if it does exist, is there any way to improving on it.

Chapter 4: Methodology
Here I study the methodology chosen to develop and the reasons for choosing it are explained. Also, it provides a clear and detailed explanation of how I collected data, analyzed information, and drew conclusions.

Chapter 5: Development and testing
This will explain all the details about the implementation and the testing of the application. Also, it contains screenshots of the finished artefact a long with descriptions about how each part of the artefact works.

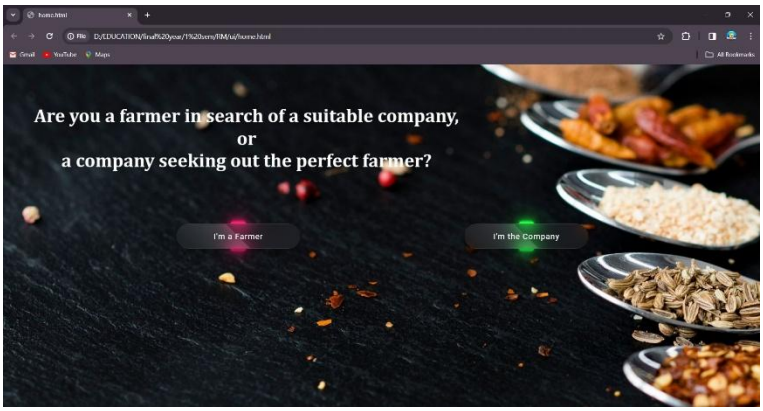
Chapter 7: Conclusion Further Work
This chapter will give an overall idea about the project and the final results of the project and will also feature limitation and future work that will discuss the future development of the project.

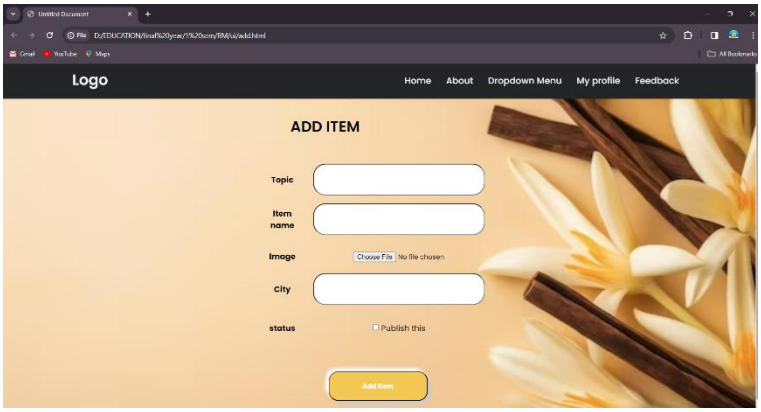
04. References

Hicks, D., n.d. *Organising digital audio libraries using audio fingerprinting.*, s.l.: s.n.

Avaliable at:
https://breo.beds.ac.uk/ultra/courses/_61994156_1/outline/edit/document/_8650635_1?courseId=_61994156_1&view=content

05. Appendix


Are you a farmer in search of a suitable company,
or
a company seeking out the perfect farmer?
I'm a Farmer
I'm the Company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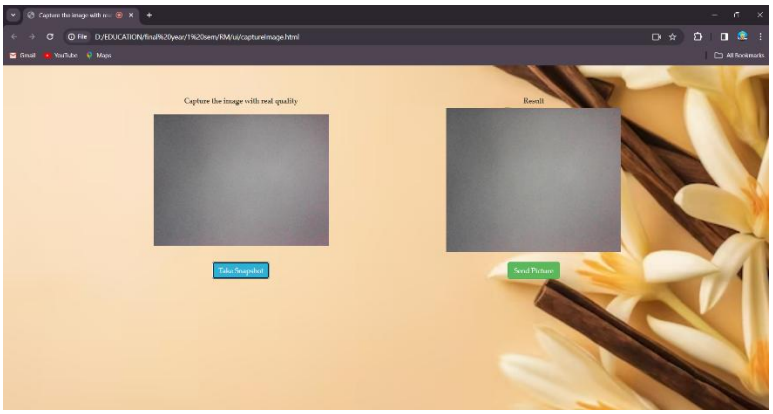
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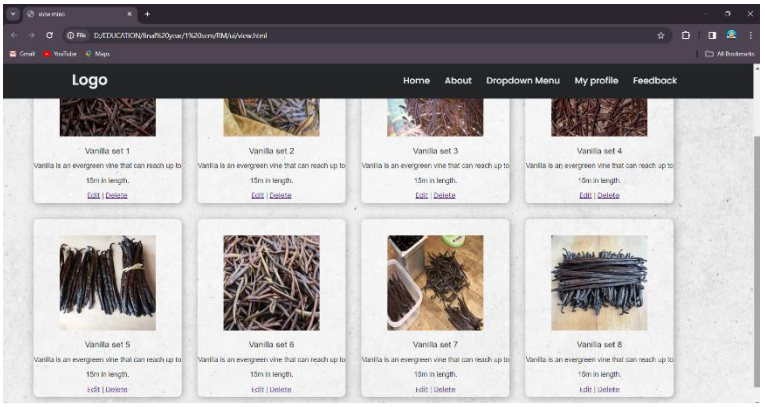
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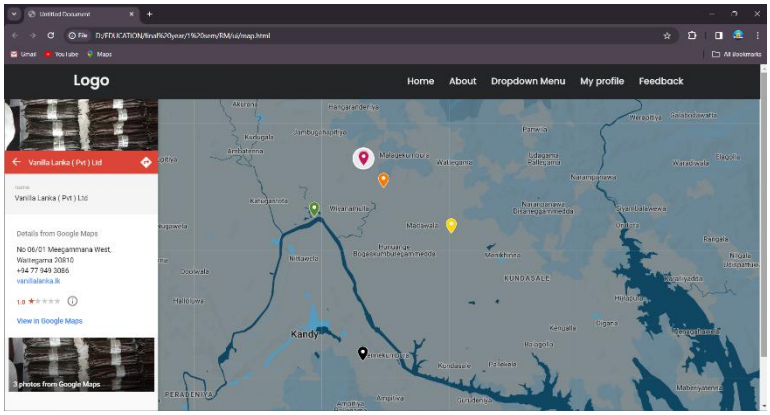
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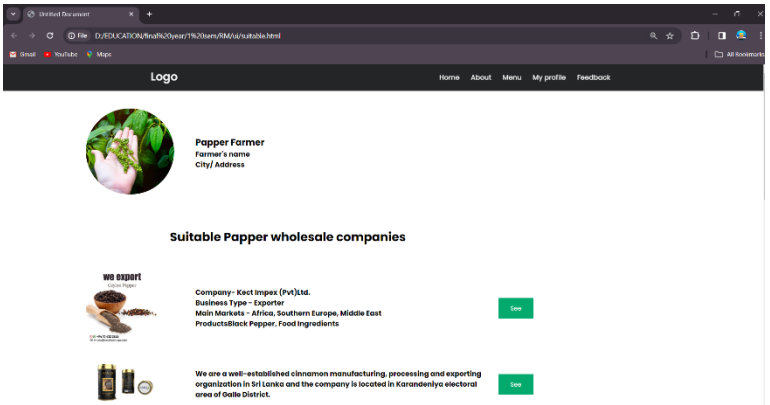
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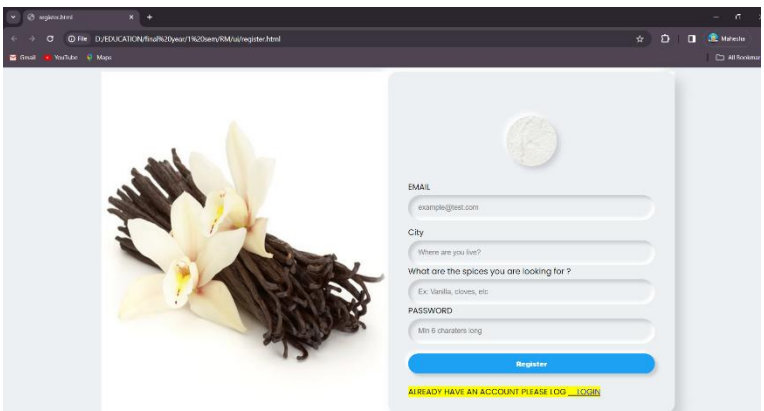
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Where are you live?
What are the spices you are looking for ?
Ex: Vanilla, cloves, etc
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ALREADY HAVE AN ACCOUNT PLEASE LOG ... LOGIN