Keells Location Intelligence System (KLIS)

Diploma in Software Engineering

Final Project Proposal

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School of Computing and Engineering

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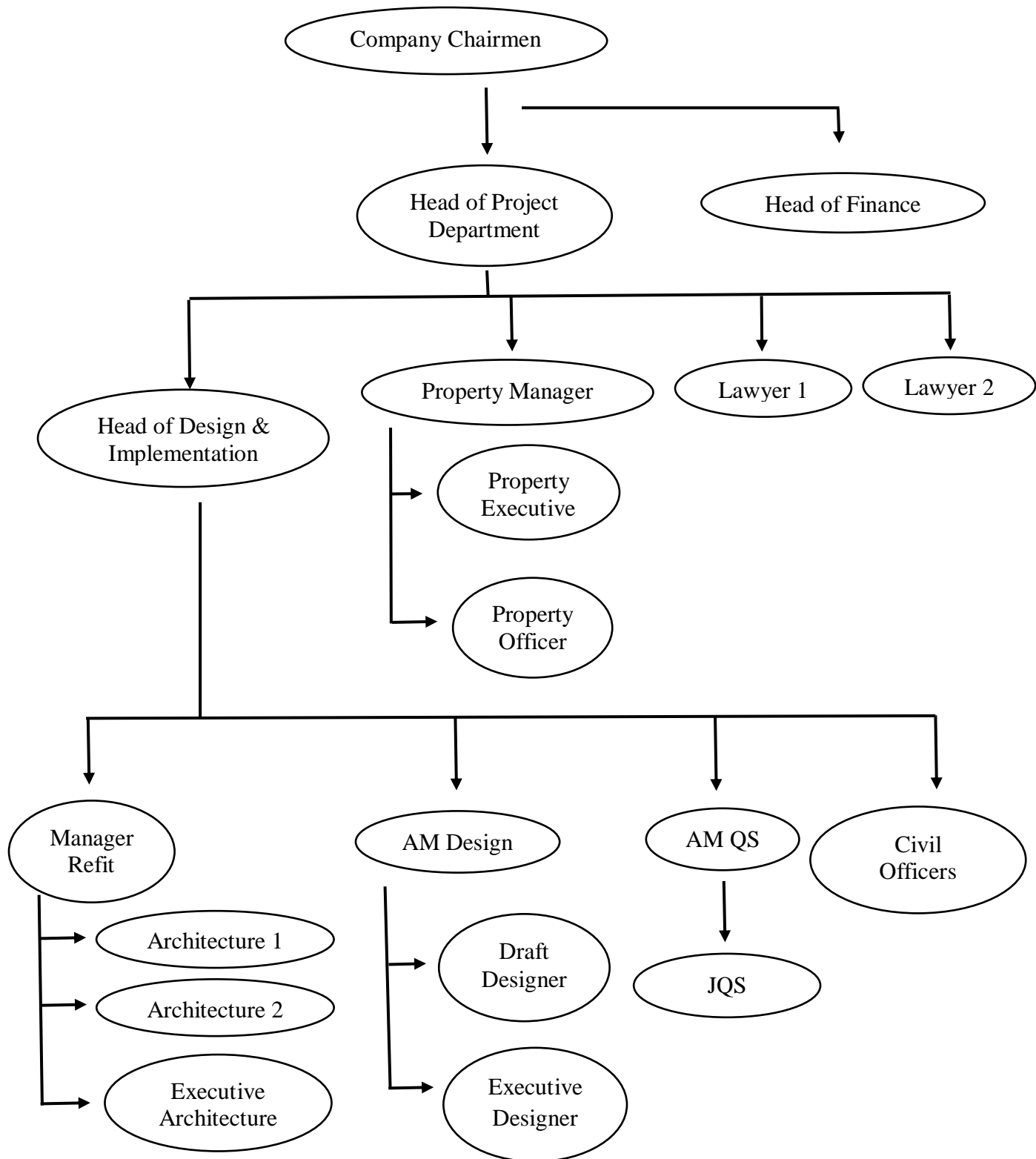
Contents

Chapter 1: Introductions

1.1 Introduction of the Organization

Keells Supermarket Chain owned by Jaykay Marketing Services Pvt Ltd is a very popular brand in Sri Lanka for more than 33 years. With 131 branches across the region, Keells supermarket has established itself as a leading provider of quality food and goods to discerning customers.

Keel's Supermarket head office in Colombo 02 operates with a centralized management board overseeing store managers. Responsibilities include marking strategic decisions, inventory efficiency. Currently, keells supermarket chain is on a very successful path by engaging with suppliers, implementing marketing strategies and attracting customers through quality products and services.

1.2 Organization Structure

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                    ┌─────────────────────┐
                    │   Company Chairmen   │
                    └─────────────────────┘
                             │
          ┌──────────────────┴──────────────────┐
          ▼                                      ▼
┌─────────────────────┐              ┌─────────────────────┐
│   Head of Project    │              │   Head of Finance    │
│    Department         │              │                      │
└─────────────────────┘              └─────────────────────┘
          │
  ┌───────┼──────────────┬──────────────┬──────────────┐
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- Head of Project Department
  - Head of Design & Implementation
  - Property Manager
    - Property Executive
    - Property Officer
  - Lawyer 1
  - Lawyer 2

- Head of Design & Implementation
  - Manager Refit
    - Architecture 1
    - Architecture 2
    - Executive Architecture
  - AM Design
    - Draft Designer
    - Executive Designer
  - AM QS
    - JQS
  - Civil Officers

4

Keells supermarket chain is one of the brand names and its parent company is Jaykay Marketing Services Pvt Ltd. We are introducing this software for the project department of Jaykay Marketing Services Pvt Ltd. But for some activities, the finance department is also related. The same officials also intervene in proposing a new outlet. So, this software is useful for them too.

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        ┌─────────────────┐
        │ Head of Finance │
        └─────────────────┘
                 │
                 ▼
        ┌─────────────────┐
        │   Manager of    │
        │   Financial     │
        └─────────────────┘
                 │
                 ▼
        ┌─────────────────┐
        │ Executive Finance │
        └─────────────────┘
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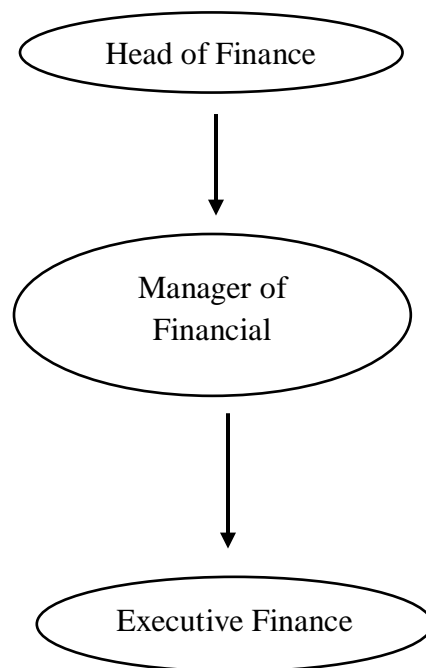
1.3 Current Operations in Organization

The Company is actively engaged in several major activities to maintain its presence and competitiveness in the market. They are paying attention to expand its reach and market share by strategically opening new outlets keell's pays special attention to its constant examination of existing problems conducting outlets and maintenance for prompt resolution of any issues. The organization proactively plans and executes events during the festival season for maximum benefit increasing consumer spending and sales. The company continuously monitors its financial performance conducting comprehensive analysis to determine profit and loss margin. Keels is constantly looking for new locations to open new outlets, maintaining detailed studies to assess the viability of potential sites and ensure sustainable development.

1.4 Users and Responsibilities Organization

User	Responsibilities
Property Manager	Collecting required data through employees
Property Executive	Requirements gathering and data presenting
Property Officer	Find the suitable location and go to those places and explore
Executive Finance	Finding and offering the most suitable locations based on financial and other criteria

1.5 Problem Definition

Keells Supermarket chain is trying to efficiently expand its outlets by identifying potential locations for new stores. Currently, they don't have the database of their old proposals. As well as they are selecting outlets by looking at several aspects. To present those aspects they have different mechanisms. As an example, they are proposing land stretches by doing analysis on software called QGIS. And they need to overlook found location through google maps. So, they don't have integrated system to overlook all aspects at single time with one screen. As a result, the process of selecting new storage locations is time-consuming, lacks consistency, and may not fully utilize existing data. Furthermore, there is no mechanism to track and access historical data on previously identified locations, hindering the ability to leverage past insights for future expansion.

1.6 Project Objectives

- Development of a system to identify, retrieve and store location data for Keells supermarket outlets.
- Presenting the locations of the highlighted area using past information
- Facilitating decisions for competitive advantage
- Streamline communication and coordination between users involved in the location selection process, including business managers and property teams.

1.7 Proposed Solution

- Create an outlet proposal information database.
- Preparation of a map including closed outlets, old proposal, competitors, highlighting suitable areas to start a new outlet.
- Providing form to input proposal details to database.
- Classification of existing outlets according to profit.

1.8 Chapter summery

This project is launched with the aim of identifying the existing problems of keells, one of the most successful retail chains in Sri Lanka, and providing a successful solution to them. Accordingly, we introduced the Keels Location Intelligence System (KLIS) software. This helps to successfully expand the business while facing competition.

Chapter 2: Methodology

2.1 Introduction

Keells supermarket network currently has a software related to identifying and mapping the areas where customers hang out. We hope to further improve the existing software in a useful and efficient manner by using the scrum framework of agile software process model.

2.2 Data Collection Methods

Information is collected using data collection methods such as interviews, and document sampling. The information of the current software, the design required for the software, the function they need, are collected through the interview method. The outlet proposal common details are collected using the document sampling method.

2.3 Software Process Model

Our proposal suggests implementing the scrum framework within our agile model to develop the system. The progress of the scrum process occurs adhering to a set of values, principles, and practices. The work is broken into time/boxed iterations. Scrum project makes progress in a series of sprints. Product is designed, coded, and tested during the sprint.

2.4 Software Development Tools

- Visual studio Code

  It's a compatible and comprehensive tool for develop a web application.

- QGIS

  A free and open-source geographic information system (GIS) software used for viewing, editing, printing, and analysis of geospatial data.

- Google API

  APIs for places, roads, directions etc.

2.5 Testing Strategies

- Black box testing

  Without any knowledge about the system architecture and source code, the testing process is carried out.

  The tester considers the user interface interaction for different inputs valid or invalid and checks the output of the system.

- White box testing/Glass box testing

  Testers should have a sound knowledge about the source code.

  The tester must find out which unit of the code behaves unwantedly.

  Commenting during the coding process is important to successfully manage this process.

  Testing of the valid and invalid inputs, logical statements and values is done.

- Grey box testing

  Having the knowledge about designing and the database of the system rather than the internal workings of the application, testing is done.

2.6 Implementation Plan

The implementation plan consists of 08 phases. Planning phase includes requirement gathering with the help of interviews and document sampling. Drawing phase goes through illustrating the computer system using UML diagrams, ER diagrams etc. It will help to build up good communication between developers and non-programmers. Development phase goes on developing the UI, features and functionalities using selected programming languages and development tools. Test phase includes testing the system according to different criteria such as Unit testing, Integration testing, System testing and Acceptance testing. In the Deployment phase, the system is made ready as a live product and environment for that is created. Client and user feedback is taken in the Review phase to see the outcomes and if the software works and is functional or not. Later this phase if there are problems in the system and investigated again the software development process starts from the Design phase and progresses. Finally, after the developer's team and client both get satisfied with features and functionalities, the system is launched.

2.7 Chapter Summery

The software development process makes progress according to agile methodology using scrum framework. The collection of data is done with the aid of interviews and document sampling. Several programming software are used as software development tools. Testing strategies are used to deliver flawless software. The system is built upon Programming languages like C#, Html, java script.