Software Requirements Specification

for

Work Management System

Version 1.0 approved

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Created on: 27/03/2023

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Revision History

Name	Date	Reason For Changes	Version
Initial Documentation	27/03/2023	Project Assignment	1.0

1. Introduction

1.1 Purpose

This Software Requirements Specification document describes all the functionalities supported by the software and limitations and constraints of the Work Management System, developed to manage various works, workers and resources.
It is designed to provide the access to the data stored in it, regarding works, and workers.
WMS is a GUI based software, using MySQL workbench to handle the databases.

1.2 Document Conventions

- The document is written in Times New Roman Font.
- Main headings (size 18) and sub-headings (size 14) are written in bold.
- The rest of the document is written out in font size 11.
- Prior knowledge about interpreting user case diagrams is preferable for better understanding.

1.3 Intended Audience and Reading Suggestions

This document is intended for the developers at the establishment (as they would be having access to the central database). Administrators and managers of the companies, who are the primary users of the software, would be mostly interacting with the front-end of the software.

This SRS contains the structure of the application as well as the software dependencies of the application, which must be present for the application to function smoothly. For reading this SRS, the reader should have a basic knowledge of Object-Oriented Programming, Database Management and python Graphical User Interface (used for developing the front-end of the software). The reader must also have some prior knowledge about use-case diagrams.

1.4 Product Scope

- WMS software aims to facilitate the efficient handling of workers' data by the administrator of the company or can be used by individuals who need to handle a specific number of workers' information.
- The software provides an interface to the individual handling the data to perform various tasks like add, edit, and delete worker details, add details of new work, perform an assignment of workers to works, work status as complete, and display worker and work details.
- The system can be used by organisations or individuals who require a tool to manage their work assignments and resource allocation.

1.5 References

Although the basic outline of the SRS was provided, other websites referred to while the making of this document

https://www.lucidchart.com/pages/ (for use case and class diagrams)

2. Overall Description

2.1 Product Perspective

Project managers often spend a lot of time planning how work will be executed. Work Management System helps eliminate the back-and-forth and navigational confusion that can accompany using numerous spreadsheets and digital file-storage platforms to track work. Instead of siloing tasks into different spaces, Work Management Software houses all tasks and resources within one platform.

The Work Management System (WMS) is a software application aimed at simplifying and organising various tasks like adding/editing/deleting worker details, adding new worker details, performing worker assignment to works, marking work stautus as complete, and displaying work and worker details.

Thus, WMS provides a user-friendly, efficient, and secure platform to large amount of data and process Requests, helping organisations control and optimize the productivity of their teams.

2.2 Product Functions

The software provides the given functionalities:

a. Add/edit/delete a worker's details - The system should allow the user to add, edit, and delete worker details. The worker details should include the worker's name, role, skill level, availability, and other relevant information.

b. Add details of a new work - The system should allow the user to add details of a new work. The work details should include the work's name, description, required number of workers, and priority.

c. Assignment of work - The user can assign specific workers to specific works according to the requirements. The software takes into account all the cases like the case of workers without any assigned work or works whose required number of workers are not fulfilled.

d. Work status handling - The system should allow the user to mark work status as complete. The user should be able to mark a work as completed once all the required tasks for that work have been completed.

e. Display worker's status - The system should allow the user to display worker's details. The worker's details should include the worker's basic details, such as name, role, skill level, availability, the number of hours worked and works completed.

f. Display work's details - The system should allow the user to display work's details. The work's details should include whether the work is completed or not, the work's requirements, workers assigned, duration and priority.

2.3 User Classes and Characteristics

The Work Management System has one type of user:

- The Administrator/Manager can do the following :-
  - Add/edit/delete/display a worker's details like role, skill level, availability, number of hours worked and works completed.
  - Add work details that include the work's name, description, required number of workers and the priority.
  - Assign specific workers to specific works according to the requirements.
  - Mark work status as complete.
  - Display worker's details which include the worker's name, role, skill level, availability, the number of hours worked and works completed
  - Display work's details that include whether the work is completed or not, the work's requirements, workers assigned, duration and priority.

2.4 Operating Environment

The software can be used by any user with access to a device with the internet. The WMS will host the database containing all the worker's information in a MySQL server. The software can run on any modern device which can load a modern web browser and has a reliable internet connection.

2.5 Design and Implementation Constraints

1. A worker can be assigned a single work at a time.
2. The duration of a work is not given when the work is being created. The start date is the date when its requirements are fulfilled and it can be started according to the priority list. The end date is when the user marks it as completed.

2.6 User Documentation

All user documentation, including basic tutorials, would be made available via the README of the repository. The same information would also be available on the deployed application.

2.7 Assumptions and Dependencies

- **Assumptions:**

- Only Admin has access to the central database.
- Input given is consistent with the format.
- A worker is assigned a single role.

- **Dependencies:**

- Python3
- MySQL Workbench: Database
- Python tkinter Graphical User Interface(GUI): Frontend

3. External Interface Requirements

3.1 User Interfaces

Company Admin Interface: This interface allows the admin to do the following:

- Add/edit/delete/display a worker's details like role, skill level, availability, number of hours worked and works completed.
- Add work details that include the work's name, description, required number of workers and the priority.
- Assign specific workers to specific works according to the requirements.
- Mark work status as completed.
- Display worker's details which include the worker's name, role, skill level, availability, the number of hours worked and works completed.
- Display work's details that include whether the work is completed or not, the work's requirements,workers assigned, duration and priority.

3.2 Hardware Interfaces

Since the software is a web application, it only requires a basic hardware interface such as a laptop, mobile, or computer where the user can run the software.

3.3 Software Interfaces

2 databases would be maintained:

- Work database: This database stores all the works currently in the system and their details, which are :-
  - Status
  - Priority
  - Requirements
  - Start date
  - Duration

- Workers' database: This database stores all the workers involved and their basic details, which are :-
  - Name
  - Skill level
  - Roles
  - Work assigned
  - Availability
  - Work done
  - Number of hours worked

3.4 Communications Interfaces

User - Front End: The user can access the front-end UI through a modern web browser.
Back End - Database: The backend communicates with the database with the help of the MySQL server.

4. System Features

4.1 User/Admin:

Access to central database:

The Admin, being the superuser, has the ability to:

- Add/modify/delete the worker details
- Add the work details
- Assign workers to the works
- Mark work status as completed
- Display worker and work details

4.2 Specifications of details:

Some of the specifications regarding the details of workers and work stored by the system are:

- Skill Level: The user can specify the expertise of a worker as beginner, intermediate or expert.
- Work requirements: The user can specify the requirements of a work in the terms of the number of workers of a specific role and skill level required.
- Availability: The availability of a worker is defined in boolean as 0 (unavailable) or 1 (available).
- Start date: The start date of a work is the date when the requirements of the work are fulfilled and when it can be started according to the priority list.
- Work duration: The duration of a work is defined as the number of days from its start date till the date it is marked as completed by the user, excluding the weekends.
- Statistics of a worker: The user can view the statiscs of a worker stored by the system like their skill level, the total number of hours worked and the previous works done by the worker.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

1. Work Management System is a web-based application and can work on a decent internet connection.
2. This can work on operating systems such as Windows, Linux, or Mac.
3. The system should be able to process requests to the database and perform computations for better performance.
4. Any of the recent versions of the browser would suffice for running this web-based application.

5.2 Safety Requirements

The safety requirements are: -

1. Admin should make sure that the software is accessed by authorised personnel only, to prevent any unauthorised access and/or change of the database.

5.3 Software Quality Attributes

1. Object Oriented Design principles has been implemented to change the software in future according to our future requirements.
2. The software can be used on any device using a browser.
3. Extensive testing of the software will be done and there will be minimal bugs and errors.

6. Other Requirements

GUI should be effective, interactive and intuitive to increase user experience. The total application should be made as sleek as possible to decrease loading time and to improve user experience.

Appendix A: Glossary

GUI: Graphical User Interface which is a form of user interface that allows users to interact with electronic devices through graphical icons.

WMS: Work Management System

Skill level: The level of expertise of a worker

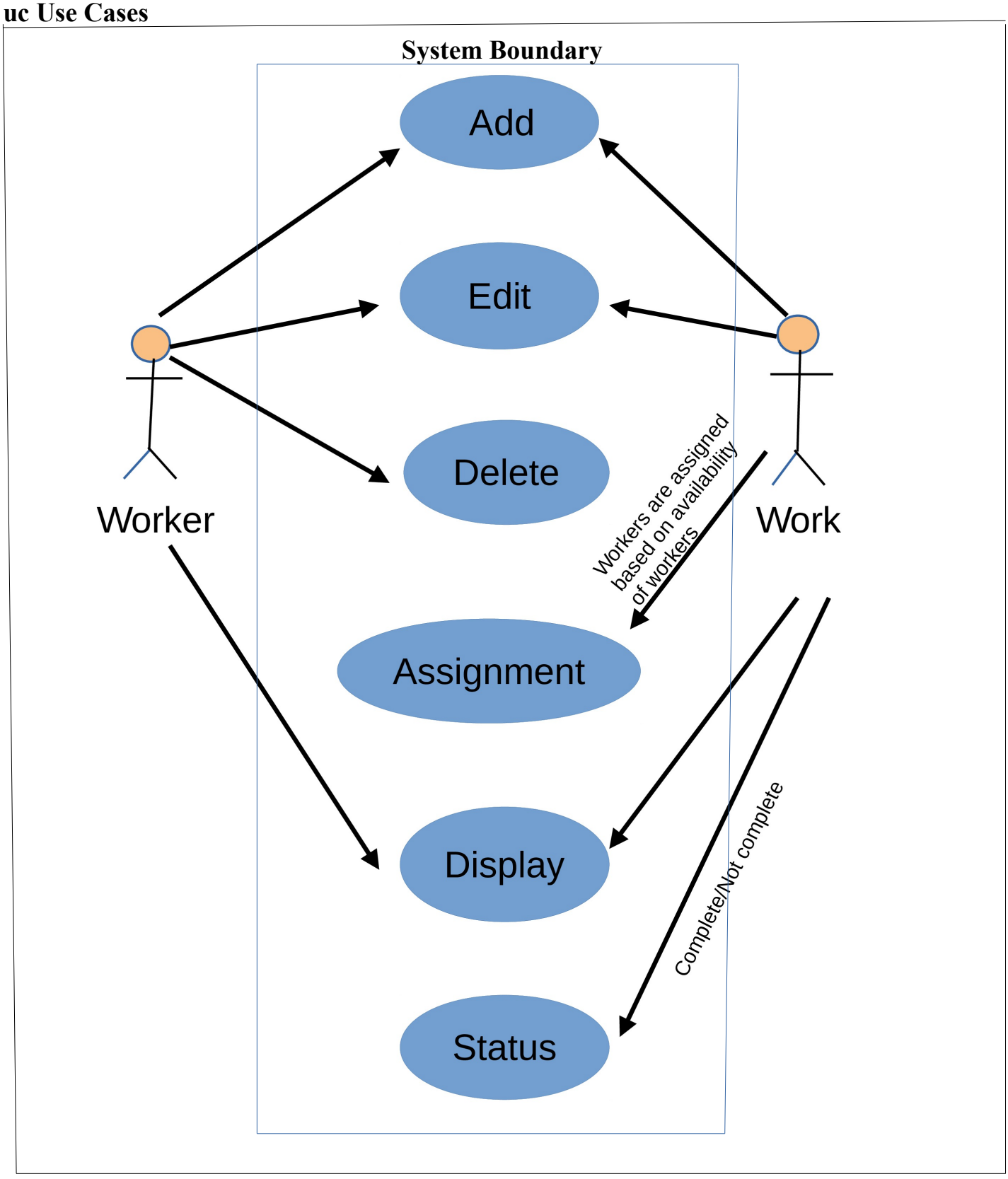
Role: The position of the worker in the organisation

Availability: Whether worker is available to work (currently not assigned to any work) or not

SRS: Software Requirements Specification, which is a document that completely describes all of the functions of a proposed software.

Appendix B: Analysis Models

a. Use Case Diagram



b. Class Diagram