**Capstone Project Document**

This document outline shows you the information required for the capstone document.

1. Use this as a template for your own document.
2. Do not remove or re-order the sections listed below.
3. If you do not have content for a specific section, i.e., “current system”, then write a sentence in that section stating so.
4. Remove any comments or explanation (Red or Blue color) in this template before submitting your document
5. Explanations of the sections are in Blue color and should be removed from the document
6. This page should be removed from the submitted document. Your first page in the document will be the next page
7. Bullets are good to use in your document when you are listing ideas

**Title Page**

* *name of system, group members, date, client(s), instructor(s)*

High Five Star

Members – Stephen Church, Robert DeVries, Scott Davis, Benjamin Barnes, Richard Hansel

04 Jan 2022

Instructor – Ali Moussa

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* *including figures, tables, and appendices*

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**Example:** Right click on the example, then select “Update Field” to update it

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## Preface

## Purpose of Document

* *What is this document about, what information does it contain that a reader might be interested in?*
* This document is to provide information and reference to “High Five Star” web application development procedure. Found in the following sections are purposes of developing the application and business requirements that it will fill. It contains Use case and design diagrams as well as system requirements. Application architecture are illustrated as well as hardware and software requirements for development and deployment. Finally, project timelines are described in detail.

## Documentation Standards

* *Special notations used in this document, e.g. use of fonts and colors*

## User Requirements

**Business Overview and Objectives**

* *Nature of the client’s business, its mission*

## Project Overview

## Statement of the Problem

* *Describe the problem the client wants you to help with*

**Project Scope**

* *summary of major* ***functional requirements*** *of the system as determined in your conversations with your client.*

**System Environment**

* *environment in which the system will be implemented. Interested in the* ***business/industrial environment*** *the system will operate in here, not technical details like OS, database, etc.*

**Current System**

* *If the client has an existing system that you will be replacing or expanding, describe it here*

**System Requirements**

**Use Case Diagram**

###### UML use case diagram. Show the use cases your application will support for users

###### **Use Case Descriptions and Scenarios**

* *Actor role definition, i.e. what types of users will your system have? Describe what each actor does*
* *Use case descriptions in the* ***real****,* ***extended*** *format as required (note the words “****real****” and “****extended****”;). This means use the two-column format for your descriptions now*
* *A* ***separate description*** *is needed for each use case in your use case diagram*

## Functional Requirements

*List of functional requirements of the system*

## Non-Functional Requirements

* *Information about how the application must do some things, e.g. performance constraints, security requirements, etc.*

## System Interface Requirements

###### Not about the “**user interface**”! Is your system going to interact with any other systems, e.g. accounting software, inventory control software etc.? A database program used by your application is not considered a separate system in this context

## Maintainability and Administration Requirements

###### Maintainability: Will your system need to be updated/extended after the initial version is deployed? How will you plan for that?

###### Administration: What are the system administration requirements for your system, e.g. must provide for easy user account administration, backup and restore, etc.?

## Usability Requirements

###### Analysis of HCI requirements. How experienced are the expected users of the system? Inexperienced users will probably need you to provide more feedback and support than experienced ones. If you have both types of users how will you support the needs of each group?

###### Here’s where you consider the **user interface** requirements for your system

**Interaction Sequence Diagrams**

* *Create diagrams for* ***at least four*** *non-trivial use cases*
  + *Show problem domain objects only in these diagrams: assume they can communicate directly with actors and are persistent (can store and retrieve data, e.g. in a database)*

**State Machine Diagrams**

* *Identify and diagram at least one complex time-dependent object behavior in your system*

**Activity Diagrams**

* *Identify and diagram at least one complex business activity or object that exhibits complex processing*

## System Design

Layered Architecture

* *Package diagram (do not show classes in the packages, only packages)*

Hardware Architecture

* *textual description*
* *Give an overview of the different computers, etc. that your system will need to function and how they will be related (in UML we use a* deployment diagram *to show this)*
* *How will the different parts of your system will communicate with each other? e.g. TCP/IP, HTTP, XML, JSON, JDBC etc.*

**Hardware Platform**

* *required hardware specs to develop and maintain, e.g. your laptop specs*
* *required hardware specs for* ***production*** *system, e.g. the server(s) the system will eventually be deployed and run on (not your development machine)*

Software Platform

* *required software specs to develop and maintain*
* *required software specs for* ***production*** *system*

Interaction Model

* *style (dialog, direct manipulation)*
* *desired user support (required help, error messages, etc.)*
* *system feedback style (what events require informing the end-user of activity, etc.)*
* *standards (colours, fonts, etc.)*
* *example of each* ***type*** *of interaction (e.g., one data-entry screen, one list-of-items screen, one error warning screen, one summary report, one detail report, etc.). These should be* ***high-quality*** *screenshots or mock-ups; they need to give a clear indication of your proposed UI style*
* *a list of every screen and sub-screen descriptive title*

Persistence Model

* *textual description of mechanism, e.g. you are using JPA, stored procedures, etc.*
* ***Conceptual*** *Schema ERD (as per Systems Analysis and Design course)*
* ***Internal*** *Schema ERD (3NF physical model as per Database courses)* ***and/or*** *file structures*
* *Calculation of expected data size (data size for each persistent class \* expected max number of stored objects of each class)*

Class Diagrams

* *one class diagram* ***per package*** *(see “****Layered Architecture****” section above)*
* *define the attributes, associations and operations for each class in your class diagrams using the full UML notations, e.g. including data types, full operation signatures for operations, etc. UI classes can be complex in structure so you do not need to fully define these*

Interaction Sequence Diagrams

* + ***One diagram per use case in the use case diagram!***

## Project Management

**Schedule**

###### major milestones (Microsoft project is useful here)

## Team Configuration

###### members, roles, reporting relationships, contact information

## Project Standards and Procedures

* *Procedures involve how your development team is going to work together on the project, e.g. regular meeting times, handling communication between team members, etc. Tools and standards might include things like development language, database to use, frameworks to use, industry standards to be followed, etc. Update as they are chosen (this is evolutionary)*

## Glossary

*[Place on a separate page of its own]*

###### definitions of **technical** terms used in this document. Some common terms might have project-specific meaning and so should be described here also, e.g. “manager” has many meanings, but if it means something specific in your project describe it to avoid ambiguity

## Index

*[Place on a separate page of its own]*

###### more than a reformatted table of contents

**Appendix A: Data Dictionary**

*[Place on a separate page of its own]*

*A data dictionary should describe each of the classes in your system, including its attributes, operations, associations, etc. It should include things like valid ranges for attributes, e.g. must not be null, must be between 1 and 10, etc., and a general description of what operations are intended to do. It is intended to be a resource that a developer can go to during project implementation if s/he needs more information on what a specific class is supposed to do in the application (and how), i.e. it’s supposed to reduce ambiguity in the design.*

*There is no standard format for a data dictionary so we recommend using one of two approaches:*

* *Use JavaDoc to create formatted descriptions of your classes, and their contents, e.g. describe the responsibilities of each class, what it’s attributes are (including things like data types, valid ranges for values, etc.), what operations each one will have and roughly what each operation should do. An advantage of using JavaDoc is that it is easy to auto-generate the data dictionary content periodically as the project progresses*
* *Create a table in Word with appropriate columns and enter the data dictionary information into that. This is simple but the content cannot be auto-generated and must be manually update*

**This page includes some links and useful resources for you document understanding. Please remove this page from the submission. It was added to help you.**

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