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INF2001/ICT2201

Introduction to Software Engineering

Milestone 1: Software Development Plan & Specification

for

<Your project title>

Prepared by

Team’s Name: *<replace with your team’s name here*>

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# Introduction

*<Provide a brief introduction to your project, the intended purpose of the project, the impact of the project, and a brief overview of what the reader will find in this section. You can use the concise project description you have created to identify your nouns for your problem statement as a starting point and expand from there.>*

## Product Scope

<Provide a short description of the software scope, boundaries, and its purpose, including relevant benefits, objectives, and goals.>

TO DO: 1-2 paragraphs describing the scope of the product. Make sure to describe the benefits associated with the product.

## Related Background Literature

<Include research you have done about the domain that your project is in here. Also, any materials you read to help you with the project, and any competing methods/APIs/software.>

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## Intended Audience and Document Overview

<Describe the different types of reader that the document is intended for, such as developers, project managers, marketing staff, users, testers, and documentation writers (In your case it would probably be the “client” and the professor). Describe what the rest of this document contains and how it is organized. Suggest a sequence for reading the document, beginning with the overview sections and proceeding through the sections that are most pertinent to each reader type.>

## References and Acknowledgments

<List any other documents or Web addresses to which this document refers. These may include user interface style guides, contracts, standards, system requirements specifications, use case documents, or a vision and scope document. >

# Overall Description

## Product Overview

<Describe the context and origin of the product being specified in this document. For example, state whether this product is a follow-on member of a product family, a replacement for certain existing systems, or a new, self-contained product. If the document defines a component of a larger system, relate the requirements of the larger system to the functionality of this software and identify interfaces between the two. In this part, make sure to include a simple diagram that shows the major components of the overall system, subsystem interconnections, and external interface. In this section it is crucial that you will be creative and provide as much information as possible.>

TO DO: Provide at least one paragraph describing product perspective. Provide your System’s Architecture diagram to illustrate how your product interacts with the environment and in what context it is being used. This is not a formal diagram, but rather something that is used to illustrate the product at a high level.

## Product Functionality

<Summarize the major functions the product must perform or must let the user perform. Details will be provided in Section 3, so only a high-level summary is needed here. These can be at the level given in the project description. You can use Activity diagrams to capture the business flow and processes in this section for the various product functionality.>

Provide a bulleted list of all the overall functions of the system.

**PF1:** The product shall …

**PF2:** The product shall …

## Assumptions and Dependencies

<List any assumed factors (as opposed to known facts) that could affect the requirements stated in the document. These could include third-party or commercial components that you plan to use, issues around the development or operating environment, or constraints. The project could be affected if these assumptions are incorrect, are not shared, or change. Also identify any dependencies the project has on external factors, such as software components that you intend to reuse from another project.>

TO DO: Provide a short list of some major assumptions that might significantly affect your design.

# Specific Requirements

## User Interface Requirements

<Describe the logical characteristics of each interface between the software product and the users. For your project, you only need to be concerned with the main thermostat (not the mobile app) and can use the graphic from the project description as the basis for your user interface...>

TO DO: Provide the graphic for the thermostat user interface and provide a basic description as to how users will interact (e.g., tough screen, menus, etc.).

## Functional Requirements

*< Functional requirements capture the intended behavior of the system. This behavior may be expressed as services, tasks or functions the system is required to perform. This section is the direct continuation of section 2.2 where you have specified the general functional requirements. Here, you should list in detail the different product functions. >*

*<These are the specific functional requirements to materialize the Product Functionality in section 2.2.>*

**FR1:** The system shall …

**FR2:** The system shall…

…

## Use Case Model

<In your Use Case model and explain your use case diagram to aid understanding of your concepts. You can place your use case descriptions in Appendix A. Please inform your readers where to find your use case description. >

## Non-functional Requirements

*<Include any generic non-functional requirements. Please include a summary of the set of generic non-functional requirements>*

**NFR1**: The system shall provide the feature to present content in multi-lingual.

**NFR2**: The system shall …

### Performance Requirements

<If there are performance requirements for the product under various circumstances, state them here and explain their rationale, to help the developers understand the intent and make suitable design choices. Specify the timing relationships for real time systems. Make such requirements as specific as possible. You may need to state performance requirements for individual functional requirements or features. >

TODO: Provide performance requirements based on the information you collected from the client/professor. For example, you can say:

**NFR3**: The secondary heater will be engaged if the desired temperature is not reached within 10 seconds

**NFR4**: …

### Safety and Security Requirements

<Specify those requirements that are concerned with possible loss, damage, or harm that could result from the use of the product. Define any safeguards or actions that must be taken, as well as actions that must be prevented. Refer to any external policies or regulations that state safety issues that affect the product’s design or use. Define any safety certifications that must be satisfied. Specify any requirements regarding security or privacy issues surrounding use of the product or protection of the data used or created by the product. Define any user identity authentication requirements.>

TODO: Provide safety/security requirements based on your interview with the client - again you may need to be somewhat creative here. At the least, you should have some security for the mobile connection.

**NFR5**: Data transmitted from and received are always encrypted with AES-128.

**NFR6**: All approving roles must use a different factor of authentication from the user authentications (on top of 2FA) for approval processes.

## Other Requirements

<This section is **Optional.** Define any other requirements not covered elsewhere in the document. This might include database requirements, internationalization requirements, legal requirements, HBRA, PDPA, reuse objectives for the project, and so on. Add any new sections that are pertinent to the project.>

# Project Estimation and Plan

*<Describe the resources required and overall time required for the project>*

## Software Estimation

*<Describe the estimated size of the project, manpower and time required. Explain the parameters you have chosen for your estimation.>*

## Project Management

*<Include your Gant Chart with WBS number and any other required charts like Burndown charts etc. here. You do not need include the workings that you use to arrive with your WBS.*>

# Appendix A – Use Case Descriptions

|  |  |
| --- | --- |
| Use Case ID: |  |
| Use Case Name: | **Sample** |
| Description: | This is a sample use case description. |
| Primary Actor: |  |
| Preconditions: |  |
| Postconditions: |  |
| Main Success Scenarios: |  |
| Alternative Scenarios: |  |

|  |  |
| --- | --- |
| Use Case ID: |  |
| Use Case Name: | **Another Sample** |
| Description: | This is another sample use case description. |
| Primary Actor: |  |
| Preconditions: |  |
| Postconditions: |  |
| Main Success Scenarios: |  |
| Alternative Scenarios: |  |

# Appendix B – Data Dictionary

*<Data dictionary is used to track all the different variables, states and functional requirements that you described in your document. The purpose of the Data dictionary is to layout the definition of terms used in this document and align the readers to the authors perspectives.*

*Make sure to include the complete list of all constants, state variables (and their possible states), inputs and outputs in a table. In the table, include the description of these items as well as all related operations and requirements.>*

Term 1

List the definition of term 1 here. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis purus ex, hendrerit sed mi consequat, dignissim lobortis velit.

Term 2

List the definition of term 2 here. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Duis purus ex, hendrerit sed mi consequat, dignissim lobortis velit.

Term 3

List the definition of term 3 here.