

Software Design Document

Game Engine

ENG-100-SDD-001

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# 1 Overview

This is a Software design document.

## 1.1 Purpose of this Document

This is a main section under the above heading.

## 1.2 Purpose of this Software

This is a main section under the above heading.

## 1.3 Main Goals

This is a main section under the above heading.

# 2 Reference Documents

This is a Software design document.

## 2.1 Software Design

This is a main section under the above heading.

|  |  |
| --- | --- |
| Document | Description |
| ENG-100-SRS | Software Requirements Specification |
| ENG-100-SDD | Software Design Document |
| ENG-100-SUD | Software User Document |

Table 2.1: Software Design Documents

## 2.2 Reference Materials

This is a main section under the above heading.

# 3 System Overview

The Software is divided into two major sections: System and Mission Software. The Mission software contains all things which are solely related to this specific application. The System software manages complexities related to the operating system and resource management which would complicate the design if included in the Mission software. In the source code the Model and the View contain Mission Software code, while the rest of the code base is considered System Software.

## 3.1 System Architecture

The top-level processes and the interconnect between them. The View is Mission Software and manages the User Interface. The Model is also Mission Software and manages the User Data. All other modules collectively form the System Software which is the Backend of the system.

## 3.2 Major Subsystems

These are the main subsystems and dataflow. The red lines indicate critical data-flow paths.

## 3.3 Data Model

This is a main section under the above heading.

# 4 Build Configuration

This is a Software design document.

## 4.1 Dependencies and Required Tools

This is a main section under the above heading.

## 4.2 Build Environment

Development requires a Linux build environment.

### 4.2.1 Setting up a Linux guest Virtual Machine

The Data Binding module tracks changes made to an object so that they can be undone at a later stage. The Data Binding is responsible for interacting with the Undo Redo subsystem.

If you are running Windows, then you may need to install a virtual machine such as VMWare Player or VirtualBox. It is suggested to install Lubuntu which can be obtained from here:

<https://www.vmware.com/products/workstation-player/workstation-player-evaluation.html>

<https://www.virtualbox.org/wiki/Downloads>

<https://lubuntu.me/downloads/>

You will need to setup a shared folder to act as a work area that is accessible from both Windows and Linux. This will require installing VMWare / VirtualBox guest extensions.

VirtualBox allows you to share folders through the options menu. Under VMWare the settings are also available but you will need to mount these folders manually in LUbuntu. The following bash script will mount the shared folder under VMWare Player

#! /bin/bash

mkdir -p ~/Desktop/Shared

chown $USER:$USER ~/Desktop/Shared

vmhgfs-fuse .host:/SharedFolder ~/Desktop/Shared -o allow\_other -o uid=$USER

### 4.2.2 Installing the build tools

The project uses GCC as a cross-compiler to build and link the binary images. At a minimum the following is required

#! /bin/bash

sudo apt install -y build-essential gcc make git gcc-mips-linux-gnu

sudo apt install -y genisoimage

You may additionally wish to install meld as a merge tool

#! /bin/bash

sudo apt install -y meld

### 4.2.3 Installing the IDE

The repository is already setup for use with VS Code which can be obtained from here:

<https://code.visualstudio.com/download>

## 4.3 Test Bench

This is a main section under the above heading.

## 4.4 Profiling

Profiling is performed through perf and Valgrind which can be installed as follows:

#! /bin/bash

sudo apt install -y perf valgrind

# 5 System Software Design

Write a short description of the above heading.

## 5.1 Subsystem 1 Design

Write a short description of the above heading.

## 5.2 Subsystem 2 Design

Write a short description of the above heading.

## 5.3 Subsystem 3 Design

Write a short description of the above heading.

### 5.3.1 Subheading

Write a short description of the above heading.

# 6 Mission Software Design

The Mission Software is purely application specific software which requires an execution environment provided by the System Software.

## 6.1 View Subsystem Design

The View represents the User Interface. The View is responsible for gather user input and presenting data to the User. The actual processing of data is handled within the Model.

## 6.2 Model Subsystem Design

The Model manages the User Data, performs data processing and organizes the data in a structured manner. The model requires a Ram Disk to operate.



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