DESIGN DOCUMENT FOR THE INTERNATIONAL EDUCATION SERVICES MATHEMATICS CHALLENGE SYSTEM

GitHub Link: <https://github.com/KisomoseArnoldPatrick/Recess.git>

G-33

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# Introduction

## Purpose

The Software Design Document is the detailed plan for developing the required piece of software. It outlines the team’s software development plan and the finished software functionality

The SDD will provide descriptions and graphical documentation of the software design for the International Education Services Mathematics Challenge system which conducts Mathematics Challenge for primary school students nationwide.

## Scope

The system will allow interested primary school children to take part in the competition by allowing the children to access valid challenges, sending a report of answers for all attempted questions to all the participants at the close of the challenge and recognizing the first two winners on the website.

### Goals and Objectives of the project

• Register schools and their representative

• Upload questions and answers into the web system

• Configure challenges with parameters like dates (open and close date), duration, question count, and marks awarded.

• Student registration and participation in challenges.

• Compute scores based on responses.

• Recognition of the first two winners.

• Generate performance reports and analytics

• Generate response emails for each action that takes place in the system

### Benefits of the Project

• Enhanced Problem-Solving Skills

• Improved mathematical proficiency

## Document Overview

This document has been arranged in chapters that reflect or show the system's requirements.

Chapter 1: Introduction

Identifies the purpose of this SDD and its intended audience.

Chapter 2: System Overview

Gives a general description of the functionality, context and design of the project.

Chapter 3: System Architecture

This is divided into sub-levels:

Chapter 3.1. Architectural Design This shows a modular program structure and explains the relationships between the modules to archive the complete functionality of the system.

Chapter 3.2. Decomposition Description

This provides a decomposition of the subsystems in the architectural design.

Chapter 3.3. Design Rationale

This provides the rationale for selecting the architecture described in 3.1 including critical issues and trade/offs that were considered. Chapter 4. Data Design This is also divided into sub-levels;

Chapter 4.1. Data Description

This explains how the information domain of the system is transformed into data structures. Chapter 4.2. Data Dictionary

This provides a list of the system entities or major data along with their types and descriptions.

Chapter 5. Component Design

This provides a more detailed view of the systematic operation of each component.

Chapter 6. Human Interface Design

This is divided into sub-levels;

Chapter 6.1. Overview of User

This describes the functionality of the system from the user’s perspective.

Chapter 6.2. Screen Images

This displays screenshots showing the interface from the user’s perspective.

Chapter 6.3. Screen Objects and Actions

This describes the screen objects and actions associated with these objects.

## Reference Material

## Definitions and Acronyms

### Definitions

Activity Diagram - Describes the flow of activities of the different actors in the system.

Use case diagram – Summarizes the details of the system and the users within the system.

Entity Relationship Diagram – Provides a visual starting point for the database design.

Sequence Diagram – Shows the sequence of messages passed between objects of the system.

### 1.5.2 Acronyms

SDD – Software Design Document

ERD – Entity Relationship Diagram

# System Overview

## System Description

## 2.2 Software requirements

These include;

● Java compiler

● Apache webserver

● Web browser

● Database Management System Software (DBMS)

## 2.3 Hardware Requirements

● Database servers

● Desktop computers

● Phones

# System Architecture

## Architectural Design

## Decomposition Description

## Design Rationale

# Data Design

## 4.1 Data Description

## 4.2 Data Dictionary

# Component Design

# Human Interface Design

## Overview of User Interface

## Screen Images

## Screen Objects and Actions

# Requirements Matrix

# Appendices