Software Requirements Specification

for

SRAK - Automated Assignment Grading System,

Release 1.0

Version 1.0

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Revision History

Name	**Date**	**Reason For Changes**	**Version**
Arish Ojaswi	24/04/2017	initial draft	1.0 draft 1
Arish Ojaswi	29/04/2017	changes after modifications made to software	1.0 approved

1. Introduction

1.1 Purpose

This SRS describes the software functional and nonfunctional requirements for release 1.0 of the Automated Assignment Grading System (SRAK). This document is intended to be used by the members of the project team that will implement and verify the correct functioning of the system. Unless otherwise noted, all requirements specified here are high priority and committed for release 1.0.

1.2 Project Scope and Product Features

The Automated Assignment Grading System will permit course instructors and teaching assistants of courses that involve evaluation of programming assignments to automate the tedious process of grading student submissions for course assignments. A detailed project description is available in the subsequent sections. The Vision and Scope section lists the features that are scheduled for full or partial implementation in this release.

2. Overall Description

2.1 Product Perspective

The Automated Assignment Grading System is a new system that replaces the current manual and time-consuming processes of evaluating the assignment submissions of students in courses that involve programming assignments. The context diagram in Figure 1 illustrates the external entities and system interfaces for release 1.0. The system is expected to evolve over several releases, ultimately connecting to online classroom interfaces for further ease of access and unification of course grading.

2.2 User Classes and Characteristics

Course Instructor

A Course Instructor is a faculty at the Indian Institute of Hyderabad who offers a particular course. There may be more than one course instructor for a given course, in which case, one or more course instructors may take the responsibility of handling programming assignments. The Course Instructor is often responsible for setting assignments, and defining the input and output format expectations. This task may sometimes also be delegated to the Teaching Assistants.

Teaching Assistant

The Teaching Assistant is the primary user of the Automated Assignment Grading System. There are usually multiple Teaching Assistants assigned to a particular course. They directly handle the inputs for the grading system and also collect and post the obtained results from the grading system. Since they are the primary users of the Automated Assignment Grading System, they must be familiar with the usage of the system. The Teaching Assistants must also specify the input and output formats that students need to follow in their submissions. They are also responsible for generating appropriate test cases along with corresponding correct outputs for the Automated Assignment Grading System to use.

Student Submissions — Student Submissions refers to the set of all submissions for a particular programming assignment that have been turned in by the students in a particular course. The Automated Assignment Grading System accesses submission files from these submissions, evaluates them, and produces relevant results for the Grade Report.

Grade Report — Once the Automated Assignment Grading System has evaluated the submissions for a particular assignment, it generates a summary report as well as a detailed report of the evaluation results. The summary report simply contains a list of all students, their submissions, and the performance of their submissions. This may be measured in multiple ways, the most common being the number of test cases passed by a submission. Furthermore, the detailed report consists of a list of errors encountered while evaluating a specific submission. This list also comprises of details of the errors for each test case failed.

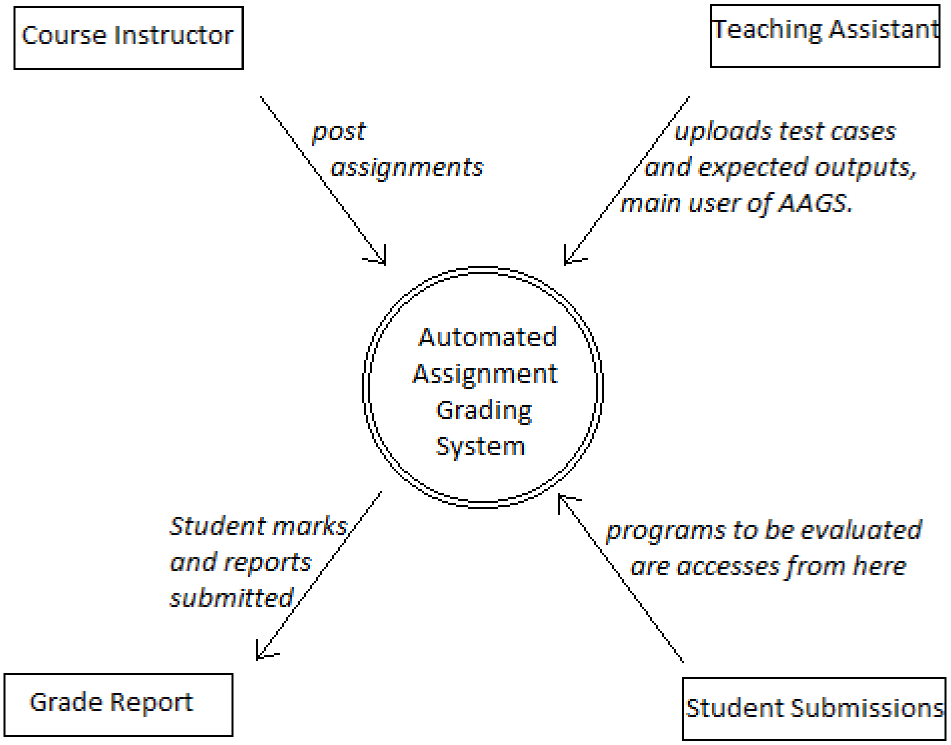
Course Instructor
Teaching Assistant
post assignments
uploads test cases and expected outputs, main user of AAGS.
Automated Assignment Grading System
Student marks and reports submitted
programs to be evaluated are accesses from here
Grade Report
Student Submissions

Figure 1.

Context Diagram for release 1.0 of the Automated Assignment Grading System

2.3 Operating Environment

OE-1: The Automated Assignment Grading System shall operate with the following Web browsers: Microsoft Internet Explorer versions 5.0 and above, Google Chrome versions 28.0 and above, and Mozilla Firefox versions 1.3 and above.

OE-2: The Automated Assignment Grading System shall operate on a server satisfying basic server operation needs.

OE-3: The Automated Assignment Grading System shall permit user access from the institutional internet at the Indian Institute of Technology Hyderabad.

2.4 Design and Implementation Constraints

CO-1: The system's design, code, and documentation follows basic good practices mandated by the Software Engineering course.

CO-2: The system does not employ any proprietary software.

CO-3: All HTML code shall conform to the HTML 5.0 standard.

CO-4: All scripts shall be written in Python.

2.5 User Documentation

UD-1: The system shall provide an online hierarchical and cross-linked help system in HTML that describes and illustrates all system functions.

UD-2: To ensure ease of access and quick learning of the tool, a video tutorial has been provided, which can be used by Teaching Assistants who are using the tool for the first time.

2.6 Assumptions and Dependencies

AS-1: The submission files are expected to be either C, C++, or Java files.

AS-2: The uploaded .zip folder must contain a list of C/C++/Java files, test input needs to be named *test.txt*, and correct output needs to be named *out.txt*.

AS-3: None of the submission files are malicious. However, if someone is able to write a file malicious enough to disrupt the tool, the student deserves an A+ (personal opinion of contributing authors).

DE-1: To be listed.

3. System Features

3.1 Summary Report

3.1.1 Description and Priority

Once the Teaching Assistant runs the Automated Assignment Grading System for a set of submissions, two reports are generated. One of them is the Summary Report. This documents gives the Teaching Assistant information about the status of compilation and running of the submissions.
Priority = High.

3.1.2 Stimulus/Response Sequences

Stimulus: Teaching Assistant uploads the set of submissions.

Response: System generates two reports, one of which is the Summary Report.

Stimulus: Teaching Assistant does not provide test input / correct output.

Response: System prints a message saying so.

3.2 Comprehensive Report

3.2.1 Description and Priority

Once the Teaching Assistant runs the Automated Assignment Grading System for a set of submissions, two reports are generated. One of them is the Comprehensive Report. For each submission uploaded by a student, the Comprehensive Report consists of a list of compilation errors that were encountered while evaluating that submission. If there are no compilation errors, the Comprehensive Report prints whatever runtime errors were encountered during evaluation. If neither runtime errors nor compile time errors are encountered, then the Comprehensive Report consists of test cases for which wrong outputs were generated for each submission. It prints the expected output as well as the submission's output.
Priority = High.