Software Test Plan (STP)
DI-IPSC-81438
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Team 1

1. <u>Scope</u>. This section shall be divided into the following paragraphs.

1.1   <u>Identification</u>. This paragraph shall contain a full identification of the system and the software to which this document applies, including, as applicable, identification number(s), title(s), abbreviation(s), version number(s), and release number(s).

The software to which this document applies is a UMBC Computer Science 201 Python Automated Grading System. The system has a Dashboard, a Admin Panel, and Instructor Panel, and a Student Panel. An admin will be able to add in instructors and students into the system. These Instructors can add in courses and add students to that particular course. The courses will have multiple assignments created by the instructor. The students can log into the system and submit their code assignments. The system, in return, will auto grade that assignment and give back a score out of the total points to the student. The student gets 3 attempts to each assignment.

1.2   <u>System</u> <u>overview</u>. This paragraph shall briefly state the purpose of the system and the software to which this document applies. It shall describe the general nature of the system and software; summarize the history of system development, operation, and maintenance; identify the project sponsor, acquirer, user, developer, and support agencies; identify current and planned operating sites; and list other relevant documents.

The purpose of the system is to make things easier for the graders and teachers in CMSC-201 classes. This software will help by auto grading all the python code assignments in the course. This document applies to the Auto Grade System developed by Team 1. The software project started 2 months ago and the customer is Prof Max. The current operating and testing site is datahole.ddns.net and there are no planned operating sites currently.

1.3   <u>Document</u> <u>overview</u>. This paragraph shall summarize the purpose and contents of this document and shall describe any security or privacy considerations associated with its use.

The purpose of this document is to create a Software Test Plan for Auto Grade System developed by Team 1.

1.4   <u>Relationship</u> <u>to</u> <u>other</u> <u>plans</u>. This paragraph shall describe the relationship, if any, of the STP to related project management plans.

N/A

2.   <u>Referenced</u> <u>documents</u>. This section shall list the number, title, revision, and date of all documents referenced in this plan. This section shall also identify the source for all documents not available through normal Government stocking activities.

N/A
http://datahole.ddns.net/cmsc447/main/documents.html

3.   Software test environment. This section shall be divided into the following paragraphs to describe the software test environment at each intended test site. Reference may be made to the Software Development Plan (SDP) for resources that are described there.

3.x (Name of test site(s)). This paragraph shall identify one or more test sites to be used for the testing, and shall be divided into the following subparagraphs to describe the software test environment at the site(s). If all tests will be conducted at a single site, this paragraph and its subparagraphs shall be presented only once. If multiple test sites use the same or similar software test environments, they may be discussed together. Duplicative information among test site descriptions may be reduced by referencing earlier descriptions.

The name of the test site is datahole.ddns.net and there are no other planned operating sites at the moment.

3.x.1 Software items. This paragraph shall identify by name, number, and version, as applicable, the software items (e.g., operating systems, compilers, communications software, related applications software, databases, input files, code auditors, dynamic path analyzers, test drivers, preprocessors, test data generators, test control software, other special test software, post-processors) necessary to perform the planned testing activities at the test site(s). This paragraph shall describe the purpose of each item, describe its media (tape, disk, etc.), identify those that are expected to be supplied by the site, and identify any classified processing or other security or privacy issues associated with the software items.

The software items include a Linux Debian Server, MYSQL Database hosted on the server, installed PHP, and Web Server. All of these items are hosted on a Linux server. All these items are also the requirement for planned testing activities at the test site mentioned above.

3.x.2 Hardware and firmware items. This paragraph shall identify by name, number, and version, as applicable, the computer hardware, interfacing equipment, communications equipment, test data reduction equipment, apparatus such as extra peripherals (tape drives, printers, plotters), test message generators, test timing devices, test event records, etc., and firmware items that will be used in the software test environment at the test site(s). This paragraph shall describe the purpose of each item, state the period of usage and the number of each item needed, identify those that are expected to be supplied by the site, and identify any classified processing or other security or privacy issues associated with the items.

The only hardware item we are using is a Raspberry Pi 2 Model B+ running Raspbian.

3.x.3 Other materials. This paragraph shall identify and describe any other materials needed for the testing at the test site(s). These materials may include manuals, software listings, media containing the software to be tested, media containing data to be used in the tests, sample

listings of outputs, and other forms or instructions. This paragraph shall identify those items that are to be delivered to the site and those that are expected to be supplied by the site. The description shall include the type, layout, and quantity of the materials, as applicable. This paragraph shall identify any classified processing or other security or privacy issues associated with the items.

No other materials required/needed for testing purposes at the above mentioned test site.

3.x.4 <u>Proprietary</u> <u>nature,</u> <u>acquirer's</u> <u>rights,</u> <u>and</u> <u>licensing</u>. This paragraph shall identify the proprietary nature, acquirer's rights, and licensing issues associated with each element of the software test environment.

N/A

3.x.5 <u>Installation,</u> <u>testing,</u> <u>and</u> <u>control</u>. This paragraph shall identify the developer's plans for performing each of the following, possibly in conjunction with personnel at the test site(s):

N/A - pieces are already acquired and installed

1. Acquiring or developing each element of the software test environment

1. Installing and testing each item of the software test environment prior to its use

1. Controlling and maintaining each item of the software test environment

3.x.6 <u>Participating</u> <u>organizations</u>. This paragraph shall identify the organizations that will participate in the testing at the test sites(s) and the roles and responsibilities of each.

Team One will conduct all the testing procedures.

3.x.7 <u>Personnel</u>. This paragraph shall identify the number, type, and skill level of personnel needed during the test period at the test site(s), the dates and times they will be needed, and any special needs, such as multishift operation and retention of key skills to ensure continuity and consistency in extensive test programs.

Personnel will only need the knowledge of how the software should work and basic computer skills since the goal of the software is to have 201 students be able to use the software easily.

3.x.8 <u>Orientation</u> <u>plan</u>. This paragraph shall describe any orientation and training to be given before and during the testing. This information shall be related to the personnel needs given in

No orientation and training to be given before and during testing.

3.x.7. This training may include user instruction, operator instruction, maintenance and control group instruction, and orientation briefings to staff personnel. If extensive training is anticipated, a separate plan may be developed and referenced here.

N/A

3.x.9 <u>Tests</u> <u>to</u> <u>be</u> <u>performed</u>. This paragraph shall identify, by referencing section 4, the tests to be performed at the test site(s).

[WIll have to list all the test cases here. I have added the ones I could think off and I am sure we could add more. These are the ones I could think off right at the top of my head. I need help for the student panel and other stuff that has to be developed]

There is no official test site and all work is done via Google Hangouts

4.2.1 - Google API Login Tests:
  4.2.1.1 -Check to make sure that the login procedure executes as planned.
  4.2.1.2 -Check to make sure that the Logout procedure executes as planned
4.2.2 - Admin Panel Tests:
  4.2.2.1 - Manage Instructor Section:
  - *Testing the adding instructor functionality and recording results*
  - *Testing if the same instructor can be added again: There should not be any duplicates*
  - *Testing if the already added instructor entries can be properly edited in the system. The functionality must execute as referenced in the software development plan.*
  - *Testing if the already added instructor entries can be properly removed by the admin in the system. The functionality must execute as referenced in the software development plan.*
  - *All the adding portions, editing existing entries, and removing entries are from database that hosts the backend data for the software.*
  4.2.2.2 - Manage Admin Section:
  - *Testing the adding admin functionality and recording results*
  - *Testing if the same admin can be added again: There should not be any duplicates as defined in Software Development Plan.*
  - *Testing if the already added admin entries can be properly edited in the system. The functionality must execute as referenced in the software development plan.*
  - *Testing if the already added admin entries can be properly removed by the admin in the system. The functionality must execute as referenced in the software development plan.*
  - *All the adding portions, editing existing entries, and removing entries are from database that hosts the backend data for the software.*
  4.2.2.3 - Manage Students Section:

- *Testing the adding students functionality and recording results*
- *Testing if the same student can be added again: There should not be any duplicates as defined in Software Development Plan.*
- *Testing if the already added student entries can be properly edited in the system. The functionality must execute as referenced in the software development plan.*
- *Testing if the already added student entries can be properly removed by the admin in the system. The functionality must execute as referenced in the software development plan.*
- *All the adding portions, editing existing entries, and removing entries are from database that hosts the backend data for the software.*
- *Add over 1000 students to see how the system goes against the Maximum capacity test.*

4.2.3 - Instructor Panel Tests:

    4.2.3.1 - Assignments:
- *Test to see if a new assignment can be added successfully as defined in SDP.*
- *Test to see if all the assignments that are already been created gets displayed properly to the Instructor.*

    4.2.3.2 - Add Students:
- *Test to see if the instructor can invite/add students to individual courses.*
- *Check to see whether or not the same student can be added again or not. No duplicates allowed.*
- *Check to see if 1000 minimum students can be added to the course at the same time - Maximum Capacity Tests*

    4.2.3.3 - Grades:
- *Test to see if the instructor can view all the grades associated with student final assignment submissions as defined in SDP.*

4.2.4 Student Panel Tests:

    4.2.4.1 - Student
- *Be able to view their grades for each assignment*
- *Test to see if they can upload assignments*
- *Test to see if they can submit an assignment with an incorrect file name*
- *Test to see if they can have their assignment regraded*

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4. Test identification. This section shall be divided into the following paragraphs to identify and describe each test to which this STP applies.

4.1 General information. This paragraph shall be divided into subparagraphs to present general information applicable to the overall testing to be performed.

4.1.1   Test levels. This paragraph shall describe the levels at which testing will be performed, for example, CSCI level or system level.

All tests are going to be performed at the CSCI level

4.1.2   Test classes. This paragraph shall describe the types or classes of tests that will be performed (for example, timing tests, erroneous input tests, maximum capacity tests).

Most tests are going to fall into the erroneous input category for setting up the classes and how the software handles grading various assignments. There will also be a maximum capacity test to stress test the software and see how it handles it

4.1.3   General test conditions. This paragraph shall describe conditions that apply to all of the tests or to a group of tests. For example: "Each test shall include nominal, maximum, and minimum values;" "each test of type x shall use live data;" "execution size and time shall be measured for each CSCI." Included shall be a statement of the extent of testing to be performed and rationale for the extent selected. The extent of testing shall be expressed as a percentage of some well defined total quantity, such as the number of samples of discrete operating conditions or values, or other sampling approach. Also included shall be the approach to be followed for retesting/regression testing.

Each test will include normal values, repeat values, not accepted values, and in the case of grading the assignment it will contain maximum value (score of 100) minimum values (score of 0) and some values for in between cases (1-99)

4.1.4   Test progression. In cases of progressive or cumulative tests, this paragraph shall explain the planned sequence or progression of tests.

Admin Panel tests -

Student Panel tests - upload with wrong name --> upload with correct name --> grade --> regrade --> view grade

Instructor Panel tests -

4.1.5   Data recording, reduction, and analysis. This paragraph shall identify and describe the data recording, reduction, and analysis procedures to be used during and after the tests identified in this STP. These procedures shall include, as applicable, manual, automatic, and semi-automatic techniques for recording test results, manipulating the raw results into a form suitable for evaluation, and retaining the results of data reduction and analysis.

Test data will be either recorded from the test script (where applicable) or recorded by hand into a spreadsheet or word doc upon completion of the test

4.2 Planned tests. This paragraph shall be divided into the following subparagraphs to describe the total scope of the planned testing.

4.2.x (Item(s) to be tested). This paragraph shall identify a CSCI, subsystem, system, or other entity by name and project-unique identifier, and shall be divided into the following subparagraphs to describe the testing planned for the item(s). (Note: the "tests" in this plan are collections of test cases. There is no intent to describe each test case in this document.)

4.2.x.y (Project-unique identifier of a test). This paragraph shall identify a test by project-uni-que identifier and shall provide the information specified below for the test. Reference may be made as needed to the general information in 4.1.

4.2.1

a.   Test objective: *Test google log in*

b.   Test level - *basic*

c.   Test type or class - *basic input test (pass/fail)*

d.   Qualification method(s) as specified in the requirements specification

e.   Identifier of the CSCI requirements and, if applicable, software system requirements addressed by this test. (Alternatively, this information may be provided in Section 6.) -

The entirety of the login requirement is being tested in this step

f.   Special requirements (for example, 48 hours of continuous facility time, weapon simulation, extent of test, use of a special input or database) - *N/A*

g.   Type of data to be recorded - *Success / Fail*

h.   Type of data recording/reduction/analysis to be employed - *N/A*

i.   Assumptions and constraints, such as anticipated limitations on the test due to system or test conditions--timing, interfaces, equipment, personnel, database, etc. - *Only assumption is that Oauth will be working properly as per the googleAPI*

j.   Safety, security, and privacy considerations associated with the test - *N/A security and privacy fall into the Oauth territory and is out of our hands*

4.2.2

a.   Test objective: *Test the admin panel's functionality*

b.		Test level - *low level or basic*

c.		Test type or class - *Input based test*

d.		Qualification method(s) as specified in the requirements specification

e.		Identifier of the CSCI requirements and, if applicable, software system requirements addressed by this test. (Alternatively, this information may be provided in Section 6.)

f.		Special requirements (for example, 48 hours of continuous facility time, weapon simulation, extent of test, use of a special input or database) - *N/A*

g.		Type of data to be recorded - *All data will be pass fail with a description of the failure*

h.		Type of data recording/reduction/analysis to be employed - *N/A*

i.		Assumptions and constraints, such as anticipated limitations on the test due to system or test conditions--timing, interfaces, equipment, personnel, database, etc. -
 N/A no assumptions or constraints with be applicable for the admin panel testing

j.		Safety, security, and privacy considerations associated with the test - *The security / privacy concern is that only admins can see the admin panel*

4.2.3
Test objective: *Test the instructor panel's functionality*

b.		Test level - *low level or basic*

c.		Test type or class - *Input based test*

d.		Qualification method(s) as specified in the requirements specification

e.		Identifier of the CSCI requirements and, if applicable, software system requirements addressed by this test. (Alternatively, this information may be provided in Section 6.)

f.		Special requirements (for example, 48 hours of continuous facility time, weapon simulation, extent of test, use of a special input or database) - *N/A*

g.		Type of data to be recorded - *All data will be pass fail with a description of the failure*

h.		Type of data recording/reduction/analysis to be employed - *N/A*

i.	Assumptions and constraints, such as anticipated limitations on the test due to system or test conditions--timing, interfaces, equipment, personnel, database, etc. -
N/A no assumptions or constraints with be applicable for the instructor panel testing

j.	Safety, security, and privacy considerations associated with the test - *The security / privacy concern is that only admins and instructors can see the instructor panel*

4.2.4

Test objective: *Test the student panel's functionality*

b.	Test level - *low level or basic*

c.	Test type or class - *Input based test*

d.	Qualification method(s) as specified in the requirements specification

e.	Identifier of the CSCI requirements and, if applicable, software system requirements addressed by this test. (Alternatively, this information may be provided in Section 6.)

f.	Special requirements (for example, 48 hours of continuous facility time, weapon simulation, extent of test, use of a special input or database) - *N/A*

g.	Type of data to be recorded - *All data will be pass fail with a description of the failure*

h.	Type of data recording/reduction/analysis to be employed - *N/A*

i.	Assumptions and constraints, such as anticipated limitations on the test due to system or test conditions--timing, interfaces, equipment, personnel, database, etc. -
N/A no assumptions or constraints with be applicable for the student panel testing

j.	Safety, security, and privacy considerations associated with the test - *The security / privacy concern is that only individual students can see their own panel and no one else's*

5.	Test schedules. This section shall contain or reference the schedules for conducting the tests identified in this plan. It shall include:

a.	A listing or chart depicting the sites at which the testing will be scheduled and the time frames during which the testing will be conducted

	The testing site is an online collaboration and all testing will be done on April 17th - April 19th 2016

b.   A schedule for each test site depicting the activities and events listed below, as applicable, in chronological order with supporting narrative as necessary:

1)   On-site test period and periods assigned to major portions of the testing
        N/A

2)   Pretest on-site period needed for setting up the software test environment and other equipment, system debugging, orientation, and familiarization
        There will be no setup time

3)   Collection of database/data file values, input values, and other operational data needed for the testing

        All database files are on the server and all input values are going to be hand generated with the exception of testing of grading which will use various python scripts

4)   Conducting the tests, including planned retesting
        Final Day

5)   Preparation, review, and approval of the Software Test Report (STR)

        Final Day

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6.   Requirements traceability. This paragraph shall contain:

a.   Traceability from each test identified in this plan to the CSCI requirements and, if applicable, software system requirements it addresses. (Alternatively, this traceability may be provided in 4.2.x.y and referenced from this paragraph.)

        See 4.2.x.y

b.   Traceability from each CSCI requirement and, if applicable, each software system requirement covered by this test plan to the test(s) that address it. The traceability shall cover the CSCI requirements in all applicable Software Requirements Specifications (SRSs) and associated Interface Requirements Specifications (IRSs), and, for software systems, the system requirements in all applicable System/Subsystem Specifications (SSSs) and associated system-level IRSs.

        4.2.x all map to a requirement laid out in the usecases document

7.   Notes. This section shall contain any general information that aids in understanding this document (e.g., background information, glossary, rationale). This section shall include an alphabetical listing of all acronyms, abbreviations, and their meanings as used in this document and a list of any terms and definitions needed to understand this document.

N/A

A. <u>Appendixes</u>. Appendixes may be used to provide information published separately for convenience in document maintenance (e.g., charts, classified data). As applicable, each appendix shall be referenced in the main body of the document where the data would normally have been provided. Appendixes may be bound as separate documents for ease in handling. Appendixes shall be lettered alphabetically (A, B, etc.).

N/A