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**State-MEANT**

**Software Requirements Specification**

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# **Introduction**

## **Purpose of this document**

The purpose of this document is to specify each requirement of the system in detail. It helps the client to get the better understanding. The intended audience for this document is Dr. Lidia Morrison.

## Project Scope

The requirements elicitation team includes each member of Team for the States Map Game: Todd Macedo, Tharsika Paramjothy, Jay Raval, Suhail Khan and Monil Waniand. These team members shall complete this project by writing project specifications, designing and testing the system, completing user documentation, and migrating the final system over to the client. The system shall include the Grade-5 students. Other prospective users shall be class teachers and parents. This game is very useful for the students to develop their history knowledge.

## 1.3 Overview

The result of the requirement elicitation shall be an educational history based game. This game is mainly focused on Grade -5 student’s history subject. This system shall be successful after the following specifications are fulfilled.

# General Description

## Product Functions

The product is intended to replace the current method/system of teaching. This product will make the process of teaching more interactive and more appealing. The game will basically cover three main periods of American history. The game tests the knowledge of the children by asking questions on the state selected. All the states need to be covered in order to complete the game and get a final score card/report

## User Characteristics

The software development team would act as administrators for the system. The system has provisions for two categories of users, one the students who will use the system to test and improve their knowledge of American history and one for the teacher who can view the performance of all the students.

## Customer or Market Need

At present there is very little desire amongst students to know about the country’s history beyond a certain point. Students learn better if they are taught in an interactive manner. This system aims at helping students learn about history in a fun and interactive manner. The system by keeping a record of students also helps teachers in monitoring the progress of his or her students and also helps them determine what areas of history they need to focus on while teaching.

## Risks

R1- Time to develop- the time to develop may vary according to the number ofchanges.

R2-Initial inhibitions- customers, particularly teachers would have their own doubts about the system.

# Functional Requirements

## System shall display main page/home page

### Description

The system shall display the splash screen containing the products name and/or logo.

### Technical conditions-

* **Precondition-**the software and hardware environment required are setup.
* **Post condition-** the splash screen is displayed after which the login page is displayed. (Along with the login tab instead of separate login screen.)

### Risks

Splash screen is not displayed properly.

### Dependencies

None

## System shall allow user to create profile

### Description

The system shall allow user to create a new profile when he/she clicks on the ‘create’ option on login page.

### Technical conditions

**Precondition**

* The login page is displayed after the initial splash screen.
* The logic for creating an account is implemented.

**Post-condition-**

* A page requesting user information/credentials is displayed.
* User profile with privileges according to type of user (teacher or student) is created.

### Risks

i. User already has an account and is trying to create a new account.

### Dependencies- 1

## System shall request for a list of students from a teacher once profile/account is created.

### Description

Once a teacher creates a profile on the system he or she should be requested/prompted to provide a list of students in his or her class.

### Technical conditions-

**Precondition-**

* User has created an account.
* User is given teacher privileges.

**Post-condition-**List of all students in the class is stored in database.

### Risks

* User does not provide a complete/accurate list of students.
* User needs to add to the initial list of students.

**d. Dependencies- 1, 2, 3**

## System shall allow the only registered users to login.

### Description

System shall allow a user to login only if he or she has an account on the system. The system should display a login screen requesting for credentials. The system should then verify the entered data with its database.

### Technical conditions-

**Precondition: -** User has created an account.

**Post-condition: -**User profile is displayed.

### Risks: - User with an account on the system cannot login due to data mismatch.

### Dependencies

**- 1, 2.**

## System shall allow users to request for a new password when they click on ‘forgot password’.

**(Add teacher’s privilege to assign passwords for students)**

### Description-

If a user has forgotten his or her password the user can create a new password by clicking on the ‘forgot password’ button.

### Technical conditions-

**Precondition-**

* User has created an account.
* User has selected security questions.

**Post-condition-**user is allowed to create new password if he/she answers the security question correctly.

### Risks-

User is not able to answer security question.

### Dependencies- 1, 2.

## System shall allow a student user to take the quiz

### Description

**-**once the student has logged in he or she should be allowed to take the quiz.

### Technical conditions-

**Precondition-**

1. User has created an account.
2. User has student privileges
3. User has been listed under a teacher.

**Post-condition-**the first question of the quiz is displayed.

### Risks-

Student is removed by a teacher from the list after starting the test.

### Dependencies

**- 1, 2, 3.**

## System shall allow students to view his or her score

### **Description**

**-**a student shall be allowed to view his or her score on the quiz.

### Technical conditions-

**Precondition: -** Student has completed the quiz.

**Post condition: -** Students score on the quiz is displayed.

### Risks

-incorrect score is displayed if a student has taken the test multiple times.

### Dependencies

**- 1,2,3,6**

## System shall allow a teacher to view scores of students in the class.

### Description

**-** Teachers shall be allowed to view scores of students in their class.

### Technical conditions-

**Precondition-**

* User has created an account.
* User is given teacher privileges.
* User has provided list of students in class.

**Post-condition-**Score of student(s) is displayed.

### Risks-

* User does not provide a complete/accurate list of students.
* User tries to see score of a student who is not in his or her class.

### Dependencies

**- 1,2,3,6.**

## System shall perform required actions once user has answered a question.

### Description

**-** If a user answers a question incorrectly the system shall display an animation and proceed to the next question. If a user has answered a question correctly the system displays an animation, updates the score and proceeds to the next question. The system performs these actions till all questions are answered.

### Technical conditions-

**Precondition-**

User (student) is logged in.

**Post-condition-**

Total score is tallied.

### Risks-

User quits/logs out of the system before completing the quiz.

### Dependencies

**- 1, 2, 3**

# Nonfunctional Requirements

## Security

The system shall be ensured by Identity verification process. The administration shall be able login and modify the content on the game page as well as change the layouts of content areas as desired. General users (Students or Teachers) shall not have access to modify content with in the system.

## Maintainability

The system shall be easily maintainable by the administration. The teachers shall be able to see the improvement on the score. The administration shall be able to change questions based on the subject criteria according to the syllabus.

# Interface requirements

## GUI

For the student or teacher States map Game interface shall be look like a website. The home page shall have the all the details about how to start the game. For a new user shall need to create a profile first then after he or she can play. The existing user shall login the game and play. Teachers shall be able to see the student’s profile and their score respectively.

In addition to that, there is a clock for each questions of the game. The clock shall start when the game start. If the student doesn’t answer in that given time or the student chooses an incorrect answer, then he/she shall be marked wrong for that question.

## Homepage Prototype

Login

Homepage

Register

## Hardware Interfaces

Users of the system shall need a functioning computer with mouse, keyboard, and any other type of input a general computer user may require. An optional requirement is speakers and sound. The necessary computer should contain modern components to run Windows 7 and Windows 8. The minimum requirement for running Windows 7 and Windows 8 is at least one gigabyte of random access memory.

## Software Interfaces

Users of the system shall need a computer with flash player. The application runs on the Windows operating system under the .NET Framework 4.0. For these software requirements, the computer running the system must either run Windows 7 or Windows 8.

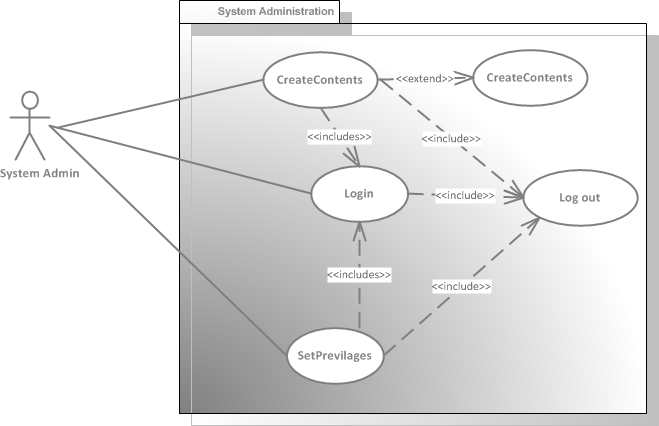
## Performance Requirements

The necessary computer should contain modern components to run Windows 7 and Windows 8. The minimum requirement for running Windows 7 and Windows 8 is at least one gigabyte of random access memory.

# UML diagrams

## Use case Diagrams

### Use case: Admin



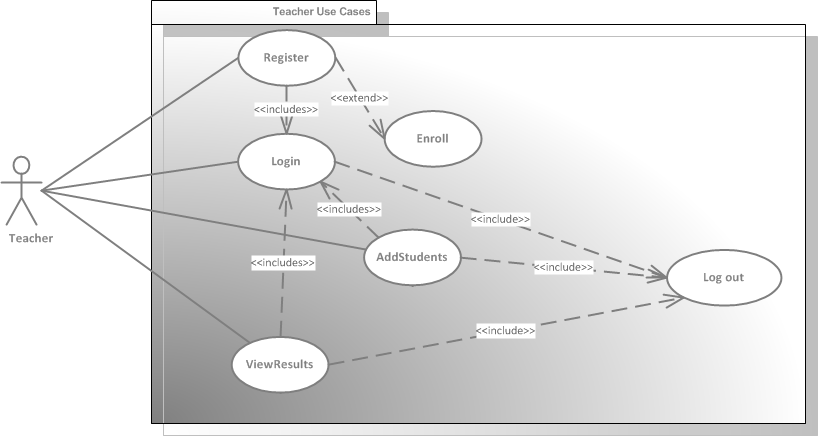
|  |  |
| --- | --- |
| **Use Case #:** | U001 |
| **Objective:** | Administrator will create the questions and answer options |
| **Priority:** | High |
| **Source:** | Suhail Khan |
| **Actor:** | System Administrator |
| **Flow of events:** | |
| **1 Basic flow** | |
|  | User launches the application and supply user id and password and click on “Login” button |
|  | User log on successfully and the home/menu page will be displayed. |
|  | User selects the “Create Contents” menu and content management screen will be displayed |
|  | User selects the state and enter question and set the answer options |
|  | User clicks on “Save button” to save the contents |
| **2 Alternate flow** | |
|  | At any step user can cancel the operation   * Cancel operation will display home page to user and will not save any data in the system. |
| **3 Includes** | |
|  | Exception occurs |
| **4: Precondition** | |
|  | User logged in |
| **4: Post condition** | |
|  | All the transactions save in the system successfully. |
|  | User loges out of the system or system timeout user’s session after 15 min. |

Note: Issues none

|  |  |
| --- | --- |
| **Use Case #:** | U002 |
| **Objective:** | Administrator will set the privileges for teaches and studnts |
| **Priority:** | High |
| **Source:** | Suhail Khan |
| **Actor:** | System Administrator |
| **Flow of events:** | |
| **1 Basic flow** | |
|  | User launches the application and supply user id and password and click on “Login” button |
|  | User log on successfully and the home/menu page will be displayed. |
|  | User selects the “Set privileges” menu and Set privileges screen will be displayed |
|  | User selects the student or teacher and set appropriate privileges |
|  | User clicks on “Save button” to save the privileges |
| **2 Alternate flow** | |
|  | Cancel operation will display home page to user and will not save any data in the system. |
| **3 Includes** | |
|  | Exception occurs |
| **4: Precondition** | |
|  | User logged in |
| **5: Post condition** | |
|  | All the transactions save in the system successfully. |
|  | User loges out of the system or system timeout user’s session after 15 min. |

Note: Issues none

### Use case: Teacher

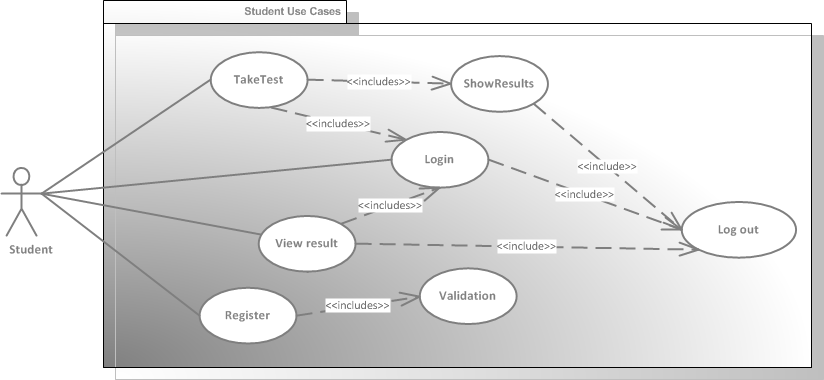


|  |  |
| --- | --- |
| **Use Case #:** | U006 |
| **Objective:** | User registers into the system and after successful registration system will display confirmation message |
| **Priority:** | High |
| **Source:** | Todd |
| **Actor:** | Teacher |
| **Flow of events:** | |
| **1 Basic flow** | |
|  | User launches the application and click on registration link. |
|  | User enters the registration id, first name and last name and click on register button. |
|  | User will see registration confirmation page |
| **2 Alternate flow** | |
|  | Cancel operation will display home page to user and will not save any data in the system. |
| **3 Includes** | |
|  | Exception occurs |
| **4: Precondition** | |
|  | User must have a valid registration number provided by System Administrator |
| **5: Post condition** | |
|  | Users registered in the system successfully. |

|  |  |
| --- | --- |
| **Use Case #:** | U007 |
| **Objective:** | User add student/students to the class |
| **Priority:** | High |
| **Source:** | Todd |
| **Actor:** | Teacher |
| **Flow of events:** | |
| **1 Basic flow** | |
|  | User launches the application. |
|  | User clicks on add student link and system will display add student screen. |
|  | User selects the student(s) to add to the class |
| **2 Alternate flow** | |
|  | If user clicks on cancel button then system will display home page. |
| **3 Includes** | |
|  | Exception occurs |
| **4: Precondition** | |
|  | User must be logged in into the system |
| **5: Post condition** | |
|  | Users may log out or system will timeout the session. |

|  |  |
| --- | --- |
| **Use Case #:** | U007 |
| **Objective:** | User views class results |
| **Priority:** | High |
| **Source:** | Todd |
| **Actor:** | Teacher |
| **Flow of events:** | |
| **1 Basic flow** | |
|  | User launches the application. |
|  | User clicks on view result link and system will display list of students with results. |
|  | User selects the student to see details of result. |
| **2 Alternate flow** | |
|  | If user clicks on cancel button then system will display home page. |
| **3 Includes** | |
|  | Exception occurs |
| **4: Precondition** | |
|  | User must be logged in into the system |
| **5: Post condition** | |
|  | Users may log out or system will timeout the session. |

### Use case: Student



|  |  |
| --- | --- |
| **Use Case #:** | U003 |
| **Objective:** | User registers into the system and after successful registration system will display confirmation message |
| **Priority:** | High |
| **Source:** | Jay Raval |
| **Actor:** | Student |
| **Flow of events:** | |
| **1 Basic flow** | |
|  | User launches the application and click on registration link. |
|  | User enters the enrolment number, first name and last name and click on register button. |
|  | User will see registration confirmation page |
| **2 Alternate flow** | |
|  | Cancel operation will display home page to user and will not save any data in the system. |
| **3 Includes** | |
|  | Exception occurs |
| **4: Precondition** | |
|  | User must have a valid enrolment number |
| **5: Post condition** | |
|  | Users registered in the system successfully. |

|  |  |
| --- | --- |
| **Use Case #:** | U004 |
| **Objective:** | User takes the test and see the results after successful completion of test |
| **Priority:** | High |
| **Source:** | Jay Raval |
| **Actor:** | Student |
| **Flow of events:** | |
| **1 Basic flow** | |
|  | User launches the application. |
|  | User clicks on start test and system will display question. |
|  | Step 1.2 will continue till the test ends. |
| **2 Alternate flow** | |
|  | If user quits the test then the answers will be saved till that point. |
| **3 Includes** | |
|  | Exception occurs |
| **4: Precondition** | |
|  | User must be logged in into the system |
| **5: Post condition** | |
|  | Users will see the results successful completion of test. |
|  | Users may log out or system will timeout the session. |

|  |  |
| --- | --- |
| **Use Case #:** | U005 |
| **Objective:** | User view result |
| **Priority:** | High |
| **Source:** | Jay Raval |
| **Actor:** | Student |
| **Flow of events:** | |
| **1 Basic flow** | |
|  | User launches the application. |
|  | User clicks on view result page and system will display test results. |
| **2 Alternate flow** | |
|  | If user clicks on cancel button then system will display home page. |
| **3 Includes** | |
|  | Exception occurs |
| **4: Precondition** | |
|  | User must be logged in into the system |
| **5: Post condition** | |
|  | Users may log out or system will timeout the session. |

## Sequential diagrams

### Sequence diagram: Admin



### Sequence diagram: Teacher



### Sequence diagram: Student



# Operational Scenario

Following is the operational scenario that covers normal and abnormal uses including user errors.

## Scenario for Administrator

|  |  |  |  |
| --- | --- | --- | --- |
| **Scenario #1:** | Create test catalog including Questions and Answers for a given state. | | |
| **Scenario Objective:** | Identify program response to several user actions | | |
| **Applicable to:** | System administrator | | |
| **Source** | **Step** | **Action** | **Comment** |
| user | 1 | start program |  |
| program | 2 | display login page |  |
| user | 3 | login | Supply correct login id |
| user | 4 | password | Supply correct password |
| user | 5 | click on “Login button” |  |
| program | 6 | display home page with menu or error “Unable to login with detailed description of user friendly error” |  |
| user | 7 | select “Create Contents - Catalog” |  |
| program | 8 | display content screen |  |
| user | 9 | select sate and enter the questionnaire and answer |  |
| user | 10 | click on “Save button” |  |
| system | 11 | Display save confirmation page or error page |  |
| User | 12 | Click OK button and continue with other activity or log out. |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Scenario #2:** | Set user privileges | | |
| **Scenario Objective:** | Identify program response to several user actions | | |
| **Applicable to:** | System administrator | | |
| **Source** | **Step** | **Action** | **Comment** |
| user | 1 | start program |  |
| program | 2 | display login page |  |
| user | 3 | login | Supply correct login id |
| user | 4 | password | Supply correct password |
| user | 5 | click on “Login button” |  |
| program | 6 | display home page with menu or error “Unable to login with detailed description of user friendly error” |  |
| user | 7 | select “Set user privileges” |  |
| program | 8 | display privilege screen |  |
| user | 9 | Select user and assign privileges. |  |
| user | 10 | click on “Save button” |  |
| system | 11 | Display save confirmation page or error page |  |
| User | 12 | Click OK button and continue with other activity or log out. |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Scenario #3:** | Register | | |
| **Scenario Objective:** | Identify program response to several user actions | | |
| **Applicable to:** | Teacher and Student | | |
| **Source** | **Step** | **Action** | **Comment** |
| user |  | Select or click “Register” link |  |
| program |  | display registration screen |  |
| user |  | Enter personal information  Login id (Enrolment number)  Password  First Name  Last Name |  |
| user |  | click on “Save” button |  |
| system |  | Display registration confirmation page or error page |  |
| User |  | Click OK button to continue. |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Scenario #4:** | Take test | | |
| **Scenario Objective:** | Identify program response to several user actions | | |
| **Applicable to:** | Student | | |
| **Source** | **Step** | **Action** | **Comment** |
| user | 1 | start program |  |
| system | 2 | display login page |  |
| user | 3 | Login | Supply correct login id |
| user | 4 | Password | Supply correct password |
| user | 5 | click on “Login button” |  |
| system | 6 | display home page with menu or error “Unable to login with detailed description with user friendly error message” |  |
| user | 7 | select “Take test” |  |
| system | 8 | display test screen (US Map and Question on top) |  |
| user | 9 | Selects the state to answer the question |  |
| system | 10 | Display the next question and |  |
| user | 11 | repeat the step #9 till the test is finished |  |
| system | 12 | display results |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Scenario #5:** | View result | | |
| **Scenario Objective:** | Identify program response to several user actions | | |
| **Applicable to:** | Student | | |
| **Source** | **Step** | **Action** | **Comment** |
| user | 1 | start program |  |
| system | 2 | display login page |  |
| user | 3 | Login | Supply correct login id |
| user | 4 | Password | Supply correct password |
| user | 5 | click on “Login button” |  |
| system | 6 | display home page with menu or error “Unable to login with detailed description with user friendly error message” |  |
| user | 7 | select “view result” |  |
| system | 8 | display results/score |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Scenario #5:** | Add students | | |
| **Scenario Objective:** | Identify program response to several user actions | | |
| **Applicable to:** | Teacher | | |
| **Source** | **Step** | **Action** | **Comment** |
| user | 1 | start program |  |
| system | 2 | display login page |  |
| user | 3 | Login | Supply correct login id |
| user | 4 | Password | Supply correct password |
| user | 5 | click on “Login button” |  |
| system | 6 | display home page with menu or error “Unable to login with detailed description with user friendly error message” |  |
| user | 7 | select “Add students” |  |
| system | 8 | display “Add students” screen |  |
| user | 9 | Selects the desired student/students for the class and click “Ok” when done | display home page with main menu |
| system | 10 | Return to home page Display the next question and |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Scenario #5:** | User Objective: view results | | |
| **Scenario Objective:** | Identify program response to several user actions | | |
| **Applicable to:** | Teacher | | |
| **Source** | **Step** | **Action** | **Comment** |
| user | 1 | start program |  |
| system | 2 | display login page |  |
| user | 3 | Login | Supply correct login id |
| user | 4 | Password | Supply correct password |
| user | 5 | click on “Login button” |  |
| system | 6 | display home page with menu or error “Unable to login with detailed description with user friendly error message” |  |
| user | 7 | select “view results” |  |
| system | 8 | display results/score | List of all students |

# Appendices

References:

UMLBook

Lecture notes