**SCENARIO**

**Purpose:**  The scenario below describes the use of an online research proposal review and tracking system by a representative IRB research client.

1. **Potential Individual users or actors:** An IRB research client can be an IRB administrator or manager, a research department of a particular organization, a post graduate student or an undergraduate student. These users can be anyway in the world and can access the application if and only if they have **access to the internet**. However, the standards of approval for IRB research clients’ cuts across regardless of level of education or purpose of research. The users of the system can also be supervisors who review proposals. In this case, the individual user is an undergraduate thesis student at Ashesi University College in Ghana.

**Equipment:** Any computer with a supported browser. Computers include smartphone, iPad, tablet and others.

**Initial assumption:** The student has created an account with the IRB system and his/her personal information has been recorded in the system and therefore has authentication credentials.

**Normal flow of events**

1. **Studen**t starts browser and types URL of the IRB system which has been send to the student’s email during the time of registration with IRB.
2. **Student** authenticates system credentials using his/her username and password.
3. The IRB **system** displays options of all research proposals that have been submitted by this student.
4. The **student** selects undergraduate thesis.
5. The **system** displays options (Check status, view proposal, Edit Proposal, delete proposal) for the selected proposal, undergraduate thesis.
6. The **student** click on check status.
7. If the research proposal was submitted over a week ago, the system check the status and display under review if the proposal is still being reviewed, the **system** **display** reviewed if the proposal has been reviewed but decision hasn’t been made. The system display approve if the proposal has been reviewed and succeeded. The system display disapproved if the proposal has been reviewed but failed to meet the IRB standards. The system displays the status of the proposal with the option to either view comments from the supervisor contact IRB.
8. If the **student** chooses to view comments, he/she will be able to read comments, suggestions or recommendations from the supervisor. If the student chooses to contact IRB, he/she will be taken to the form embedded into the systems.
9. When the student finish either filling the form or viewing comments, **the student** logs off and close the application.
10. The application closes.

**What can go wrong?**

The student has forgotten their password in which case the student will be given the option to select forgot password. The system asks the user to enter their username or email address and have a reset password link send to their email.

**Other activities**

Proposals can be withdrawn or edited within one week of submission. Proposals can be viewed any time after submission including after review. The student can also add new proposal because the system accepts multiple proposals from the same user. Students also have option to unsubscribe or delete their IRB Application account either before or after proposal review.

1. **Use Case Diagram**
2. **Name of use case**: Check Research Proposal Status
3. **Actors**: Research Student

**USE CASE DIAGRAM FOR IRB SYSTEM:**

Update

Register students

Submit

View personal info



View



Create profile

Student

System Administrator

Generate reports

Login

Add proposal

**Flow of events:**

1. Students connects to IRB application server.

2. The IRB Application server authenticated ask the student to enter his/her credentials and checks whether the students is already authenticated.

3. Student selects a proposal to check status from a list of submitted proposals.

4. The student selects Check status from a of options (Check status, view proposal, Edit Proposal, delete proposal)

5. When the students select check status, the application displays pending if proposal hasn’t been reviewed, under review if review is in progress, reviewed if proposal has been reviewed but decision hasn’t been made, approved if the proposal succeeded or disapproved if the proposal failed.

6. The student view comments from the supervisor if necessary or contact IRB for any clarifications or questions.

7. Research Student logs out.

Entry conditions:

1. The Research student must have IRB authentication credentials

2. Computing requirements: supported browser, Firefox, google chrome, explorer, safari and torch.

1. **User Requirements**
2. **Functional Requirements**: These are services that the IRB system shall provide.

**Interface requirements**

* The username field accepts entry in the form firstname.lastname.
* The password field accepts any characters.
* The first screen determines whether the user is authenticated or not.
* The system must allow the user to create an IRB Application account
* The system must allow users to confirm their registration
* The system must allow the user to log in with valid credentials
* The system should allow authenticated users to check the status of their application
* The system should allow authenticated users to contact IRB if necessary
* The system should allow the users to reset their password in case they forget their password
* The system should notify users to change their password at least 10 days before password expiration date.
* The system should notify the user at every stage of their application status for example submission, under review, reviewed, approved or disapproved

**Business and Certification Requirements**

* An IRB User Account must be created and have information stored and validated in the database before the user can use the system.
* All proposals must be assigned a proposal ID and a submission ID
* The system shall allow students to select one proposal from a list of submitted proposal
* The system shall provide IRB Review Approval online certificates.
* The system shall inform students concerning submission, approval of certificates or completion of review through mail

**Regulatory/Compliance Requirements**

* The database will have a functional audit trail.
* The system will limit access to authorized users that is users with IRB authentication credentials.

**Security Requirements**

* IRB supervisors cannot edit proposals or grant certificates but can review proposals and send a feedback form to the student.
* IRB system administrators cannot review proposals but can authenticate users and grant certificates of approval as requested by the supervisor.
* The student can log in and logout
* The student can view status, edit proposal, delete proposal , add proposal
* The student can contact the IRB information center if necessary

**NON-FUNCTIONAL REQUIREMENTS:**

**PRODUCT REQUIREMENTS:**

• Usability: Any literate person can use the system by following procedures as displayed on the system interface. An average literate person need less than 15 minutes to be conversant with the system.

• Capacity: The student can submit at most 2 proposals in a month. The system can handle at most 1,000 concurrent users satisfying all requirements.

• Efficiency: Review of all submitted proposals will begin at least 7 days after submission.

• Effectiveness: The student users can delete IRB account and unsubscribe before or after proposal review

• Quality: The system will be upgraded to new versions at most twice per year with little changes to meet changing customer requirements. Users shall be asked to complete a quick survey (maximum 5 minutes) to rate their experience with the system.

• Portability: The system works on any computer with supported browsers such as Google Chrome, Firefox, Internet Explorer and Safari

• Reliability: No more than 1 per 10,000 transactions shall result in a failure requiring a system restart.

• Resilience and Performance: Depending on the user’s internet connection, every request shall be processed within 5 seconds

• Response time: Decision concerning approval of proposals will be made within 21 days after review has started

• Security: Every password shall contain at least 8 characters including: at least one capital letter and at least one numeric value or special character. Every password shall have a life span of at most 90 days.

**PROCESS REQUIREMENTS:**

• Accessibility: If the user enters the wrong password three times, his/her account will be temporary blocked with a notification sent immediately to their email address.

• Compliance: Submitted proposal can be withdrawn or edited within 7 days after submission

• Disaster recovery: In case the system is down, the downtime shall not exceed 10 hours and no data will be lost.

• Maintainability: Users will be notified through email when the system has been upgraded or additional functionalities have been made.

• Privacy: IRB student users can not approve their own proposals but can edit or withdraw proposal within 7 days after submission

• Supportability: The system shall be available in English, Chinese, French and Spanish. Upon submission, the system accepts proposals saved in the PDF format.

**EXTERNAL REQUIREMENTS:**

• Interoperability: The interface of the system shall be designed with vibrant colors and understandable semantics that users and other technical systems such as supported web browsers can easily understand.

• Fault tolerance: The system defect rate shall be less than 1 failure per 1000 hours of operation

1. **User Requirement Specification**

**Functional requirement selected**: The system must limit access to authorized users that is users with IRB authentication credentials.

* 1. the inputs and outputs

Inputs for creating account

* First name, last name, email, gender, title, photograph, organization and date of birth

Outputs:

* A confirmation link send to user email address

Inputs for logging in:

* Valid username and password

Output from logging in:

* The output is the user’ profile on the left side and the list of proposals submitted by the user so far.

1. the user interface required ***Create Profile***

**Welcome to IRB research proposal Application. Please fill in your details below.**

**First name:**

**Last name:**

**Email:**

**Gender:**

**Title:**

**Date of Birth:**

**Organization:**

|

Male

Miss

Add Image

Dd-mm-yy

Cancel

Register

The purpose of the web page above is for maintaining the user profiles by the administrator

***First Screen*** : The purpose of this web page below is to authenticate the user.

**Welcome to IRB Research Proposal Application System!**

Username:

Password: 

 

Firstname.lastname

***Second Screen***



**Assumption**: The user click check status for the proposal titled ‘The causes of mental health.’

***Third Screen***



This web page allows the user to see the status of their application and comments from their supervisor.

1. **THE DATA ENTITIES AND**
2. **DATABASE AND SQL PROCEDURE**

**User Profile Data Entity**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Type** | **Description** | **Comment** |
| First name,  Last name | varchar  varchar | First name of student  Last name of student |  |
| Password | varchar | Password for authentication purposes | Used as key in Users database |
| Email Address | varchar | Internet address |  |
| username | varchar | Firstname.lastname | For authentication purposes |
| Date of Birth | Date | To validate only users aged 18 and above | Age not returned |
| Gender | Enum (male, female, other) | For business statistics purposes |  |
| Organization | varchar | Area of expertise and validate only partner organizations | May be several |

**Login Entity**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Type** | **Description** | **Comment** |
| username | varchar | Foreign key from user profile class | Firstname.lastname |
| Password | MD5 (varchar) | Foreign key from user profile class |  |

**Proposal Entity**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Type** | **Description** | **Comment** |
| ProposalName | varchar | Name of Proposal | May be several |
| Research Type | ENUM (Medical, Social, behavioral, Other) | Type of research being carried out |  |
| Prpoposal\_ID | int | Primary key | Ensure uniqueness |
| DateSubmitted | Date | Used to track application status | At most 2 proposals can be submitted on a particular day |
| User\_ID | int | Foreign Key | For security purposes |

**Proposal Status Entity**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data Item** | **Type** | **Description** | **Comment** |
| Proposal ID | int | Foreign key | Referential integrity from proposal entity |
| Date Submitted | Date |  |  |
| Status | ENUM (Pending, Under\_Review, Reviewed, Approved, Disapproved) | Proposal review can start at least 7 days after submission date |  |
| Submission ID | int | Primary Key | To ensure uniqueness in case 2 proposals were submitted on the same day |

1. **Classes and methods you need to implement**

* User Profile Class

Methods:

* View Profile ()
* Update Profile ()
* Login ()
* Login class

Methods:

* Check Status ()
* View Proposal ()
* Add proposal ()
* Edit proposal ()
* Follow Up ()
* Logout()
* Submit Proposal ()

1. **Constraints:**

* The user need to be create an account with IRB by filling all fields before performing any functions.
* The user need to confirm account through his/her email before registration can be completed
* The user need to log in using username and password every time they visit the IRB web application.
* The user password has a life span of at most 90 days
* The user can only unregister or delete user account with IRB before proposal review or after review has been completed.

1. a. Testing the functional requirement

|  |  |  |
| --- | --- | --- |
|  | **Test Case 1** |  |
|  | **Test case Name: Log in** |  |
|  | **Priority: High** |  |
|  | **Purpose: Verify Log in with a valid user account and valid login credentials** |  |
|  |  |  |
|  | **Input** | **Output** |
| Step 1 | Open a browser by clicking a supported browser | The browser opens |
|  |  |  |
| Step 2 | Enter IRB Research Proposal Application URL | IRB Application opens |
|  |  |  |
| Step 3 | Click on log in button | login fields open |
|  |  |  |
| step 4 | Enter a valid username as firstname.lastname and enter a valid password |  |
|  |  |  |
| Step 5 | Click on the login button | The system logs you in to IRB Research Proposal system |

|  |  |  |
| --- | --- | --- |
|  | **Test Case 2** |  |
|  | **Test case Name: Log in** |  |
|  | **Priority: Medium** |  |
|  | **Purpose: Verify Log in with a valid user account and invalid login credentials** |  |
|  |  |  |
|  | **Input** | **Output** |
| Step 1 | Open a browser by clicking a supported browser | The browser opens |
|  |  |  |
| Step 2 | Enter IRB Research Proposal Application URL | IRB Application opens |
|  |  |  |
| Step 3 | Click on log in button | login fields open |
|  |  |  |
| step 4 | click on the forgot password button | New interface opens requiring the user to enter their email address |
|  |  |  |
| Step 5 | Enter a valid mail address, the email that the user used to create an IRB account |  |
|  |  |  |
| Step 6 | click on the "Search user button" | A pop up message notifies the user to check a reset account mail from IRB in their inbox |
|  |  |  |
| Step 7 | Open user email and verify user credentials |  |
|  |  |  |
| Step 8 | Go back to log in page and fill in your credentials | Log in successful |

|  |  |  |
| --- | --- | --- |
|  | **Test Case 3** |  |
|  | **Test case Name: Log in** |  |
|  | **Priority: Low** |  |
|  | **Purpose: Verify Log in with an invalid user account and invalid login credentials** |  |
|  |  |  |
|  | **Input** | **Output** |
| Step 1 | Open a browser by clicking a supported browser | The browser opens |
|  |  |  |
| Step 2 | Enter IRB Research Proposal Application URL | IRB Application opens |
|  |  |  |
| Step 3 | Click on log in button | login fields open |
|  |  |  |
| step 4 | click on the 'register me' button | Registration Interface opens |
|  |  |  |
| Step 5 | Fill in all required details |  |
|  |  |  |
| Step 6 | click on the "Register" button | A pop up message notifies the user to confirm their registration |
|  |  |  |
| Step 7 | Open user email |  |
|  |  |  |
| Step 8 | Follow the link and confirm registration |  |
|  |  |  |
| Step 9 | Go back to user log in page and fill in your credentials | log in successful |

Conditions:

* The user must enter username as firstname.lastname paying attention to the first name and last name they used while creating an account with IRB
* The user must have created a valid account with IRB.
* The user’s password must be less than 91 days old.
* The user must enter username as firstname.lastname paying attention to the first name and last name they used while creating an account with IRB
* The user must have created a valid account with IRB.
* The user’s password must be less than 91 days old.

**The time it will take to implement**

* Given the limited technical skills of my team and I, I believe that this software will take 3 months to implement. This is also backed by the fact that we intend to use the reuse -oriented component model such as free interface designs such as mobility and BYOD.

**Risks that will make it difficult to implement.**

* Outsourcing configuration system
* Administrator security roles
* Competence given that we are still students
* Lack of sustainability since this project is being done for academic purposes
* Financing the project