



American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

PROJECT TITLE

Income Tax Return Assessment Software

A Software Engineering Project Submitted

By

Semester: Spring_2022-23		Section:	Group Number:	
SN	Student Name	Student ID	Contribution (CO1+CO2)	Individual Marks
01	Das, Satyajit	21-44374-1	20%	
02	Noman, Md Abdullah Al	21-44379-1	20%	
03	Nasir, Nawshin	21-44405-1	20%	
04	Monjori, Maishara	21-44383-1	20%	
05	Sakib, Md Omar Faruk	21-45077-2	20%	

The project will be Evaluated for the following Course Outcomes

CO1: <i>Analyze</i> the impact of software engineering models over various context of software development to assess societal, health, safety, legal and cultural issues.	Total Marks	
	Project Background Analysis and feasibility (needs, goal, benefits, etc.)	[5 Marks]
	Analysis the impact of societal, health, safety, legal and cultural issues	[5Marks]
CO2: <i>Explain</i> appropriate software engineering model, project management roles and their skills in the context of professional engineering practice and solutions to complex engineering problems in a software development environment.	Review of existing Studies and Relevant Example	[5Marks]
	Total Marks	
	Appropriate Process Model Selection and Argumentation with Evidence	[5Marks]
	Evidence of Argumentation regarding process model selection	[5Marks]
	Submission, Defense, Completeness, Spelling, grammar and Organization of the Project report	[5Marks]

Description of Student's Contribution in the Project work

Student Name: Das, Satyajit
 Student ID: 21-44374-1
 Contribution in Percentage (%): 20
Contribution in the Project:

- Project proposal
- Functional requirements
- Class Diagram
- Role Identification
- User interface
- Test Case (FR_1, FR_2, FR_3, FR_4)
- COCOMO
- Timeline Chart
- Work Breakdown

Signature of the Student

Student Name: Noman, Md Abdullah Al
 Student ID: 21-44379-1
 Contribution in Percentage (%): 20
Contribution in the Project:

- Project proposal
- Functional requirements
- Class diagram
- Activity diagram
- Software process model
- Role identification
- User interface
- Test Case (LW_1, LW_2, LW_3, LW_4)
- Work Breakdown
- Timeline Chart
- EVA
- Risk Analysis

Signature of the Student

Student Name: Nasir, Nawshin

Student ID: 21-44405-1

Contribution in Percentage (%): 20

Contribution in the Project:

- Project proposal
- Functional requirements
- Use case diagram
- Sequence diagram
- User interface
- Test Case (TP_1, TP_2, TP_3)
- Work Breakdown
- Timeline chart
- EVA
- Risk Analysis

Signature of the Student

Student Name: Monjori, Maishara

Student ID: 21-44383-1

Contribution in Percentage (%): 20

Contribution in the Project:

- Project proposal
- Functional requirements
- Use case diagram
- User interface
- Test Case (TO_1, TO_2, TO_3, TO_4)
- Risk Analysis

Signature of the Student

Student Name: Sakib, Md Omar Faruk

Student ID: 21-45077-2

Contribution in Percentage (%): 20

Contribution in the Project:

- Project proposal
- Functional requirements

- User interface
- Test Case (S_1, S_2, L_1)
- COCOMO
- Timeline chart
- EVA

Signature of the Student

1. PROJECT PROPOSAL

1.1 Background to the Problem

A civil person is required to file their tax return each year. Currently, the process is analog in our nation. Therefore, it is too difficult for many people to complete this process. This hassle's primary causes include corruption and a drawn-out process. Since this process is still analog, the general public has little understood of it. This issue is crucial since taxes are crucial to the national economy and must be processed.

1.2 Solution to the Problem

The software we're developing for this project will analyses income tax returns and offer a simple solution to the aforementioned issue. The program we are developing will offer a simple and quick solution to finish the income tax return process. This software will enable system transparency and, as a result, reduce corruption. This approach is workable since all the information would be recorded and available to both the tax-paying public and the income tax officers. With the help of the software's functionalities, the taxpayer will be able to offer accurate documentation of his assets and income. On the other hand, the rates and percentages of tax assigned to various types of assets and income ranges are predetermined by the income tax officials. The software will calculate the entire amount of tax due and transmit it to the taxpayer so they can pay it online making the best use of state-of-art technologies. General citizens, income tax attorneys, and income tax government authorities will all utilize this program. With the help of this software, the average person will be able to calculate their tax amount very easily, a lawyer can assist a client using it, and an income tax official will use it to speed up the process and keep track of each payer's payments, including when they were made, how much was paid, and when they will need to make another payment, among other information. The existing software solutions for tax return assessment in Bangladesh include e-TIN, NBR Taxation System, and Bangladesh National Board of Revenue (NBR) Online Tax Filing System.

Our proposed solution can extend these existing solutions by incorporating advanced features such as real-time tax calculation, personalized recommendations, integration with financial management tools, improved data security, and a user-friendly interface. Additionally, we can provide real-time support to users and help them understand the process more easily. By providing a comprehensive solution that covers all aspects of tax return assessment, our proposed software can provide significant value to users.

Software category in world and Bangladesh perspective. Why it's different than other similar software??

Our suggested software project is an A category program for Bangladesh and a B category software in many other nations due to its widespread implementation. We also want some exciting extra functions through this program, which will be fantastic. By including cutting-edge features like real-time tax calculation, individualized recommendations, integration with financial management tools, enhanced data security, and a user-friendly interface, our suggested solution can improve upon these current options. We can also give users immediate assistance and facilitate their understanding of the procedure. Our suggested software can offer users a lot of value by offering a complete solution that addresses every facet of tax return evaluation.

2. FUNCTIONAL REQUIREMENTS:

1. Sign Up

1.1 Taxpayer Sign Up:

1. Name: Firstly, Taxpayer will provide his/her first name and last name as per his NID.
2. Date of Birth: User will provide his/her date of birth as per his NID.
3. Address: User needs to provide his/her present and permanent address.
4. Email: User needs to enter his email address, it's a mandatory step.
5. Phone: User needs to enter his phone number, it's also mandatory like email.
6. NID: User needs to Enter his/her NID number.
7. Upload NID
8. TIN: User needs to Enter his/her TIN number
9. Upload TIN
10. Passport Number (Optional): User needs to Enter his/her passport number.
11. Upload Passport (Optional)
12. Driving License (Optional): User needs to Enter his/her driving license number.
13. Upload Driving License (Optional)

1.2 Lawyer Sign Up:

Lawyer will provide above information. After these they needs to provide some must information

1. Lawyer License ID: Lawyer needs to provide his lawyer license Id number.
2. Upload Lawyer ID

1.3 Income Tax official Sign Up:

Their Sign-up information will be generated by admin.

2.Sign In

NID/Lawyer License Id: User need to enter their NID / Lawyer License Id number in the user text field. (For official login unique id will be provided)

Password: User need to enter their password in the “Password” text field.

2.1 Sign In/Login will be based on Authentication and Authorization login.

2.2 The software will allow users to login with their given username and password.

2.3 The login credentials (username and password) will be verified with database records.

2.4 If the login successful the home page of the user account will be displayed.

2.5 If the username and/or password has been inserted wrong, the random verification code will be generated and sent to the user’s email address by the system to retry login.

2.6 If the number of login attempt exceed its limit (3 times), the system shall block the user account login for one hour.

3.Sign Out:

User can sign out from this software anytime after a successful login.

USER1. Taxpayer:

After a successful login user can perform these following actions.

- Edit Login Information
 1. User can edit login info for example: change password.
 2. User can save the changes after editing.

3. User can apply 2-factor authentication for which a phone number or email id needs to be provided.
 4. Software will send a verification code to verify the phone number/ email id.
 5. On verification 2- factor authentication will be activated
- Show Notification
 1. User will have a notification icon.
 2. User can view notifications shown in a list by clicking on the icon.
 3. On clicking a specific notification, the user can view the detailed information of the notification.
 4. Notifications regarding recent update on the tax law, user's assessment status, deadline, verification of documents, answers of queries, Lawyer request approval
 - Information Update
 1. User can update documents of their assets.
 2. System can import/export data from the documents.
 3. System will verify the documents submitted by the user.
 - Calculate Tax
 1. Users need to provide his income and expense information with proper documentation.
 2. System will calculate tax based on the assets and documents given by the user.
 - Submit Tax
 1. System generates a unique assessment number to the user.
 2. User can pay tax online via online banking/mobile banking/bank challan using the assessment number.
 3. System will verify payments/transactions.
 4. User will receive a payment receipt.
 5. Payment receipt will be stored in transaction history.
 - Track Assessment Status
 1. User can track if the tax submission is approved by officials.
 - Transaction History
 1. Tax payment histories can be viewed by the user.
 2. Lawyer payment histories can be viewed.
 3. Payments of the previous year will be stored.
 4. Virtual assistant payment histories can be viewed.
 5. Receipt of previous payments can be extracted.
 - Download Assessment Certificate

1. User can download approved assessment certificates.
 2. Previous assessment certificates can be viewed and downloaded.
- Ask Query/ Help
 1. Users can ask tax related queries.
 2. Answers of FAQs would be given.
 3. Answers apart from the ones in FAQs are received from officials later.
 4. User can view answers of previously asked questions.
 - Lawyer Request
 1. In case of any legal issues user can request a lawyer
 2. User can view different lawyer profiles.
 3. User can communicate with lawyer via the software.
 4. User can book physical appointments if necessary.
 - Lawyer Payment
 1. System generates a unique assessment number to the user.
 2. User can pay tax online via online banking/mobile banking.
 3. System will verify payments/transactions.
 4. User will receive a payment receipt.
 5. Payment receipt will be stored in transaction history.

User2: Lawyer

After a successful login a lawyer can perform the following actions.

1.Edit Login info:

Lawyer will be allowed to edit his login info by clicking on edit info after successful login.

Email: Lawyer can add new email or change email address for verification.

Password: Lawyer can edit his login password through email verification.

2.Info Update:

Lawyer can update his legal documents or certificates.

3.Client request:

Lawyer accepts taxpayer request and assist individuals.

4.Client personal info:

Lawyer can access taxpayers' legal documents and personal information.

5.Client assessment info:

Lawyer will be allowed to conduct taxpayer assessment information.

6.Client legal issues:

Lawyer will be the legal representative of taxpayer and observer of legal issues.

7.Submit client tax:

Lawyer can pay taxes on client behalf.

8.Work as a virtual Lawyer:

A lawyer can assist a taxpayer during his free time virtually. It will be a real time service providing.

User3: Income Tax Officials

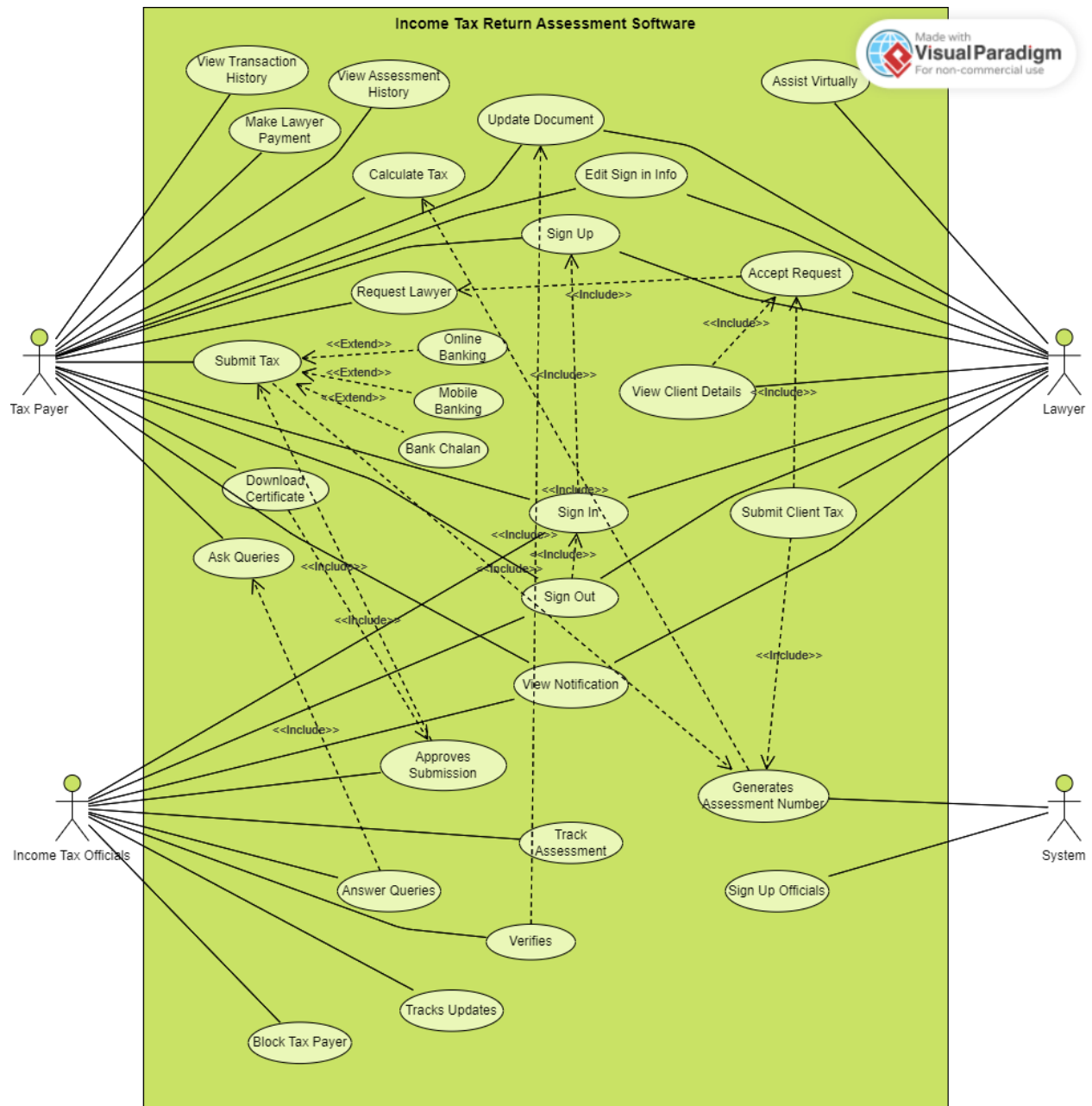
After a successful login an income tax officials can perform the following actions.

- Answer Query
 1. Receives a list of questions asked by Taxpayers (apart from FAQs)
 2. Selects questions from the queue and submits the answer.

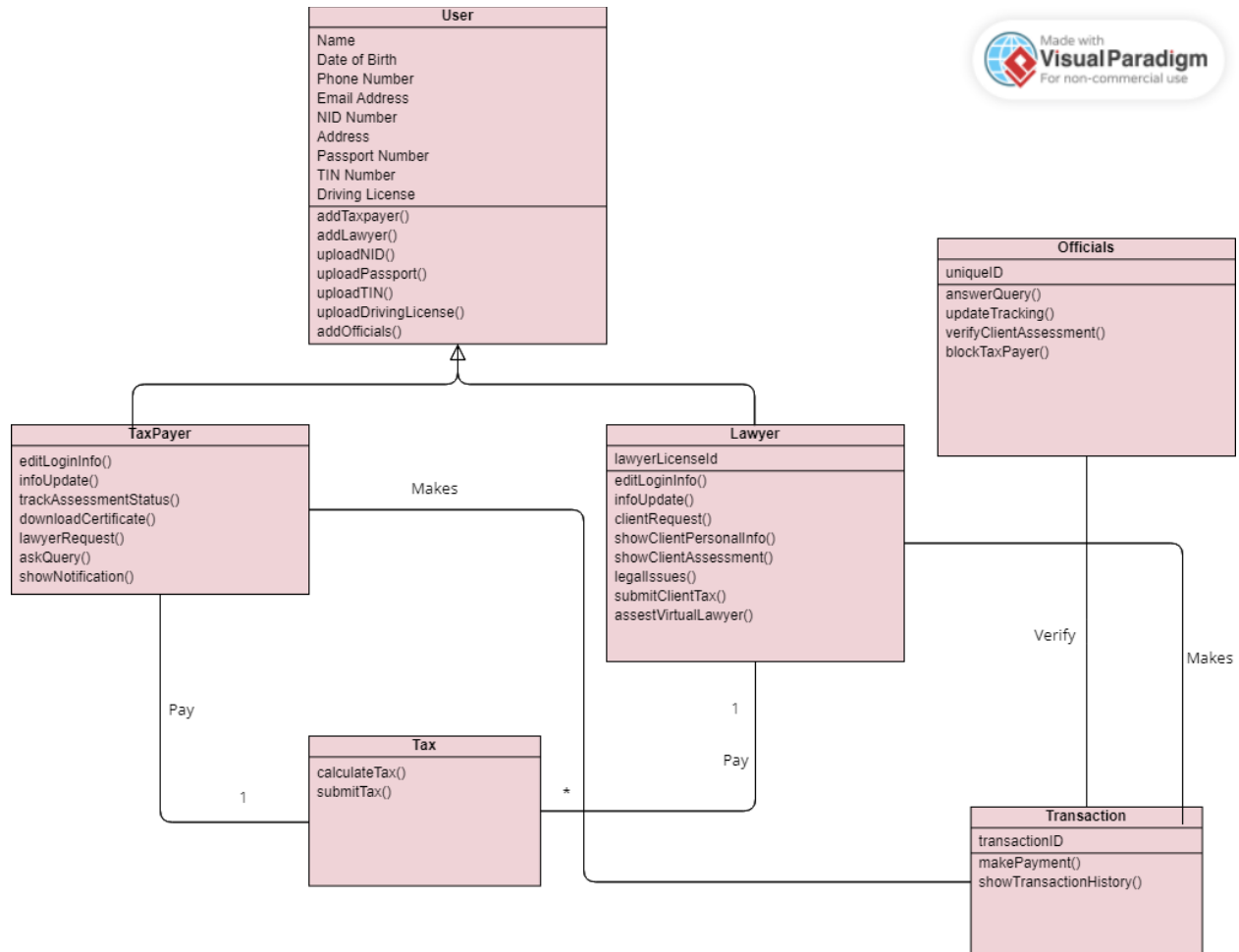
- Verify Client Assessment and documents.
 1. When a new taxpayer logs in with documents, users verify the documents.
 2. When a taxpayer makes a tax payment, user verifies the assessment and provides the assessment certificate.
- Update Tracking
 1. The phases of tax assessments are tracked and approved by the officials.
- Block Taxpayer
 1. In case of improper document submission user can block Taxpayer's account
 2. If a taxpayer doesn't make tax payments after being notifying thrice, user can block taxpayer.
 3. In both mentioned cases a taxpayer would have to consult a lawyer

3. PROJECT DIAGRAMS:

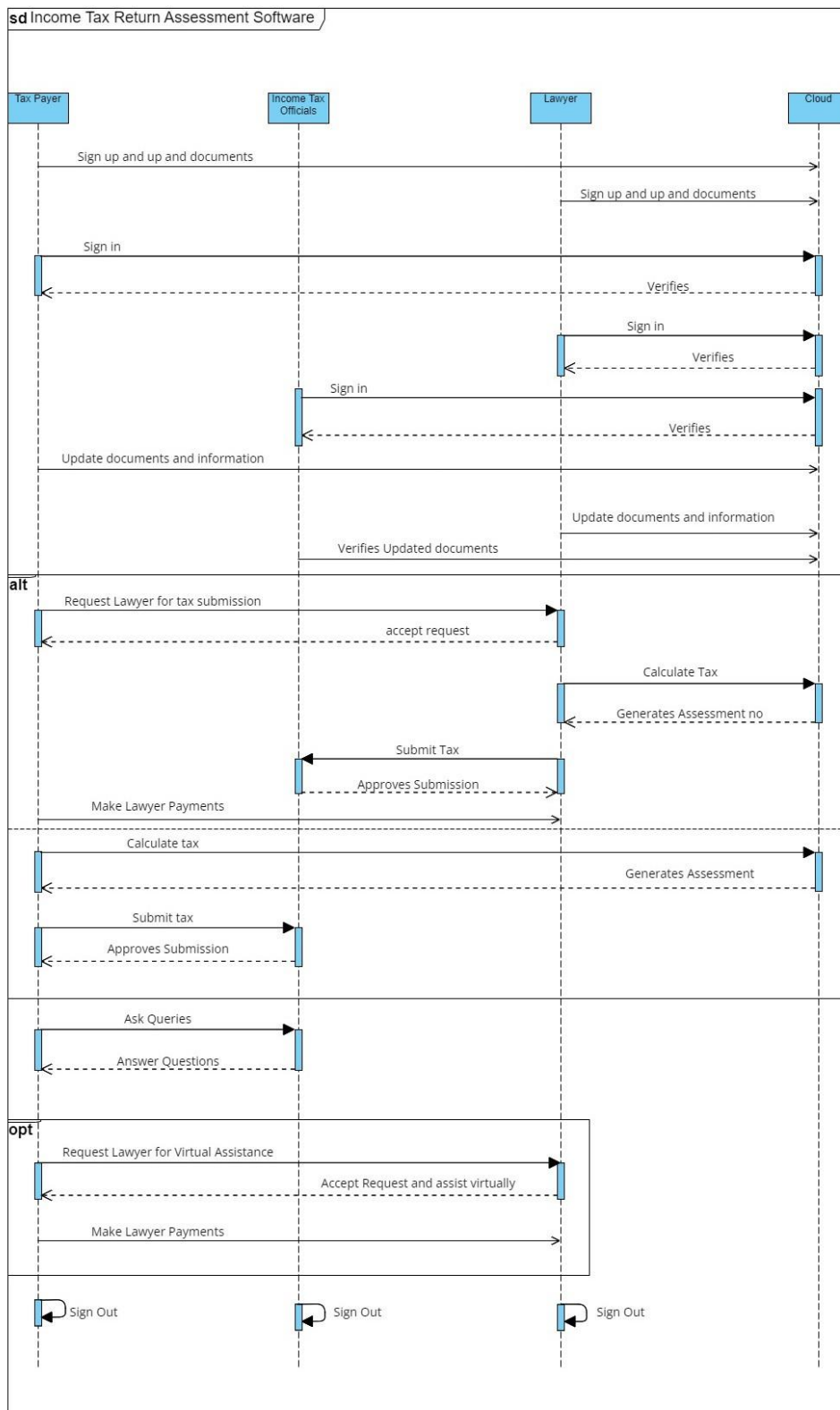
i. Use Case Diagram:



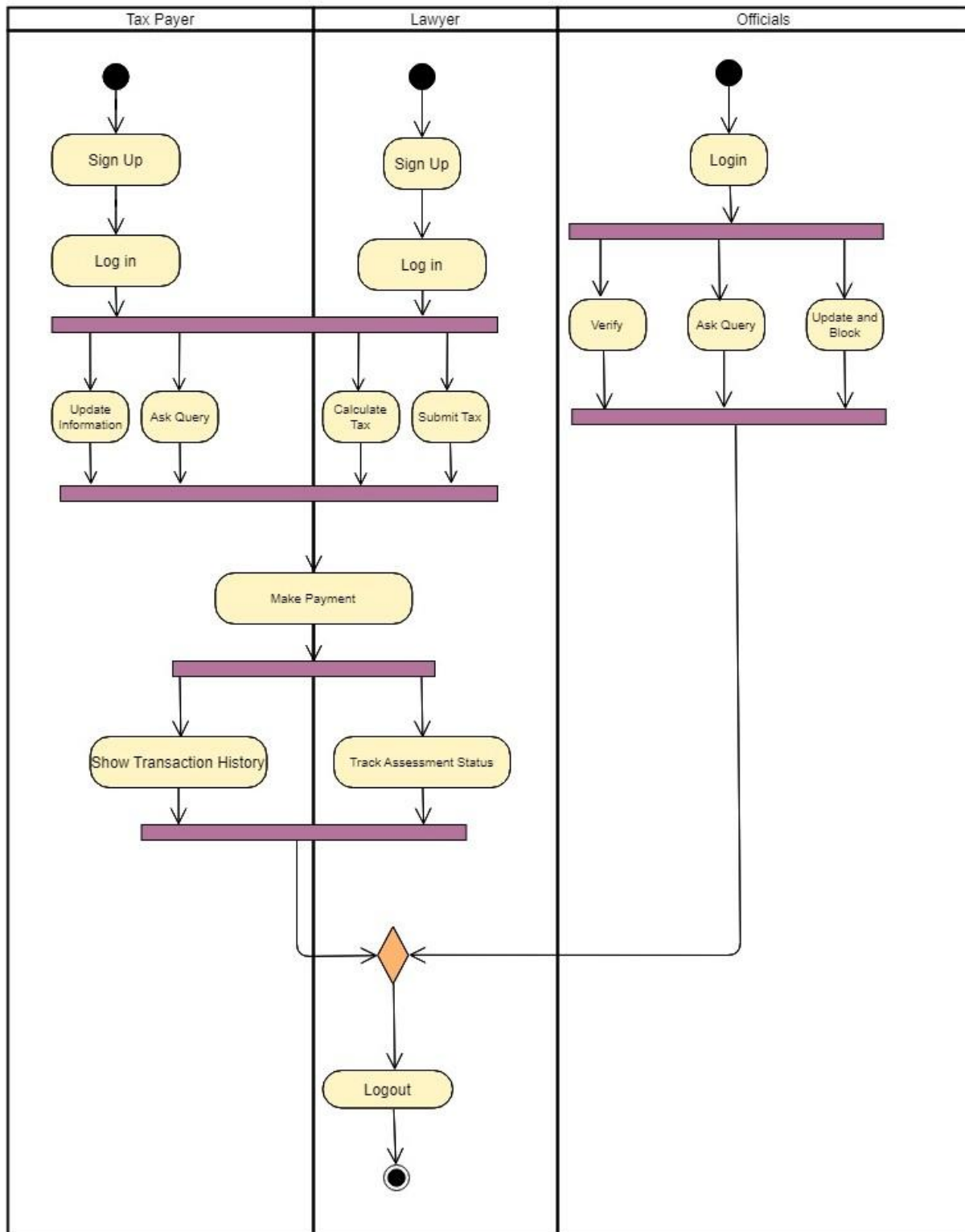
ii. Class Diagram:



iii. Sequence Diagram:



iv. Activity Diagram:



4. SOFTWARE PROCESS MODEL:

Software Process model for Income Tax Return Assessment Software:

Depending on several factors such as project requirements, team size, team structure, customer involvement and project scope, we have chosen Agile Methodology. However, for our Income Tax Return Assessment Software, the Scrum framework could be a good fit.

Why we chose this software process model?

Scrum is one of the most widely used Agile methodologies, and it is suitable for projects with a clear scope and specific deliverables. In Scrum, the project is divided into small sprints, typically two to four weeks, and the team delivers a potentially shippable product increment at the end of each sprint. This allows for frequent feedback from stakeholders and enables the team to adapt to changing requirements.

Overall, Scrum is a good fit for our Income Tax Return Assessment Software because it provides a structured approach to development, allows for frequent feedback and adaptation, and places a lot of emphasis on customer involvement through the role of the Product Owner.

Why our chosen process model different from other models?

The plan-driven development is always planned, and the results are to be shown at the end of the product. While in agile development, planning is always incremental, where we can change the plan according to our customer requirements which is very important as we are engaging rapid clients or users.

Scrum, XP (Extreme Programming), and LSD (Lean Software Development) are all Agile methodologies, each with their strengths and weaknesses. Here are a few reasons why Scrum may be considered better than XP and LSD:

Scrum provides a more structured framework than XP or LSD, with clear roles, events, and artifacts that help to stay organized and focused on specific goals. This can be beneficial for larger or more complex projects like assessment software.

Scrum places a strong emphasis on customer collaboration and involvement throughout the development process, which ensures that the final product meets our customer's needs and expectations. While XP also emphasizes customer collaboration, LSD may not provide as much opportunity for customer involvement.

Most importantly, according to our chosen project Scrum is highly scalable and can be adapted to work with teams of any size, from small to large teams. While XP and LSD can also be scaled, they may require more effort to do so.

Scrum, XP, and LSD are all based on iterative and incremental development, which allows teams to deliver working software at regular intervals, providing feedback and ensuring that the project is on track. However, Scrum's more structured approach may be better suited to some teams and projects.

Scrum emphasizes continuous improvement, with regular retrospectives that help teams identify areas for improvement and implement changes. While XP and LSD also focus on continuous improvement, Scrum's more structured framework may make it easier for us to implement changes.

Overall, Scrum is based on three pillars: Transparency, Inspection, and Adaptation hence we considered this best fitted model for our project.

5. PROJECT ROLE IDENTIFICATION AND RESPONSIBILITIES:

In a software project, there are typically several roles that are identified, each with their own set of responsibilities. These roles may vary depending on the size and complexity of the project, as well as the specific methodology being used. However, some common roles and their responsibilities in this software project are:

1. **Project Manager:** The project manager is responsible for planning, executing, and monitoring the project. They must ensure that the project is completed within budget, on schedule, and to the required quality standards. They also oversee communication between team members, stakeholders, and clients.
2. **Software Architect:** The software architect is responsible for designing the software system's architecture, including selecting the appropriate technologies, creating a high-level design, and ensuring that the design is scalable, maintainable, and secure.
3. **Developer:** Developers are responsible for writing and testing the software code. They work closely with the software architect and business analyst to ensure that the code meets the requirements and design specifications.
4. **Quality Assurance (QA) Engineer:** QA engineers are responsible for testing the software to ensure that it meets quality standards. They work with the development team to create test plans and test cases, execute tests, and report bugs.
5. **DevOps Engineer:** The DevOps engineer is responsible for deploying and managing the software application in production. They automate deployment processes, monitor the system, and troubleshoot issues that arise.

6. **UX/UI Designer:** The UX/UI designer is responsible for creating a user-friendly and visually appealing interface for the software system. They work with the business analyst to understand the user's needs and create wireframes and prototypes.

Overall, each role in a software project plays a critical role in ensuring that the project is successful. Clear communication, collaboration, and coordination between team members are essential for delivering a high-quality software product that meets the client's needs.


In addition to the roles and responsibilities of the project team, it's also important to consider the user roles in a software project. User roles represent the various types of users who will interact with the software product and have specific responsibilities and expectations. Some common user roles and their responsibilities in this software project are:

1. **End-users:** End-users are the people who will use the software product to perform specific tasks. Their responsibilities include learning how to use the software and providing feedback on its usability, functionality, and overall effectiveness.
2. **Administrators:** Administrators are responsible for managing the software product and its users. Their responsibilities include setting up user accounts, assigning user roles and permissions, and configuring the software to meet the needs of their organization. They will also work as support staff.
3. **Customers:** Customers are the people who will purchase and use the software product. Their responsibilities include providing feedback on the software's features, pricing, and overall value proposition. They may also be responsible for making purchasing decisions and negotiating contracts with the software vendor.
4. **Testers:** Testers are responsible for testing the software product to ensure that it meets the user's requirements and works as expected. Their responsibilities include creating and executing test cases, reporting bugs, and verifying that bugs have been fixed.

By understanding the various user roles in a software project, the development team can design and develop a software product that meets the needs of its intended users. The user roles can also help guide decisions related to software features, user interface design, and overall usability.

6. Wireframe Design:

Home page



LET'S GO

Login page

Sing in

ID:

Pass:

Login

Forgot password

Are you new?

Join as a taxpayer

Taxpayer sing up page

Taxpayer.

Sing up

Name:

D.O.B:

Address:

Email:

Phone:

NID:

TIN:

passport Num:

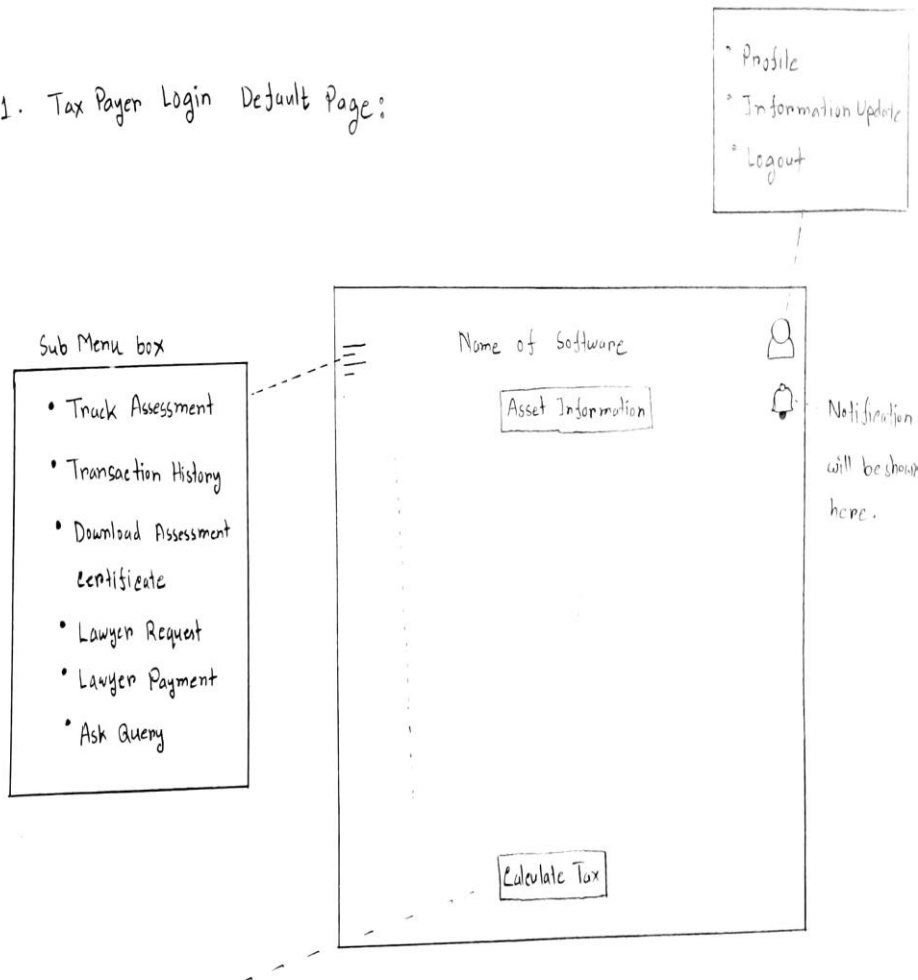
Driving License:

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Lawyer sing up page

Lawyer	Sing up
* Name :	<input type="text"/>
* D.O.B	<input type="text"/>
* Address	<input type="text"/>
* Phone	<input type="text"/>
* NID	<input type="text"/>
* TIN	<input type="text"/>
passport Num	<input type="text"/>
* Lawyer license	<input type="text"/>
Driving license	<input type="text"/>

1. Tax Payer Login Default Page:



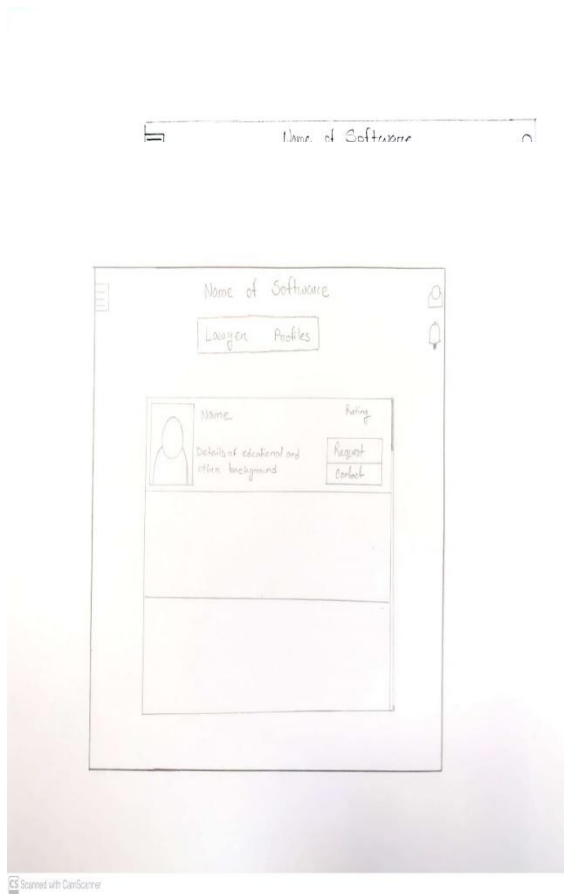
After clicking calculate tax, it will redirect into a third party payment page like (SSLCommenz)

1. Profile option Sub-menu: (Profile Update)

A hand-drawn wireframe of a 'Profile Update' sub-menu. At the top left is a hamburger menu icon. At the top center is the text 'Name of Software'. At the top right are two icons: a person icon and a bell icon. Below these is the title 'Profile Update'. The form contains three input fields: 'Update UserID: _____', 'New Password: _____', and 'Old Password: _____'. At the bottom center is a rectangular button labeled 'Update'.

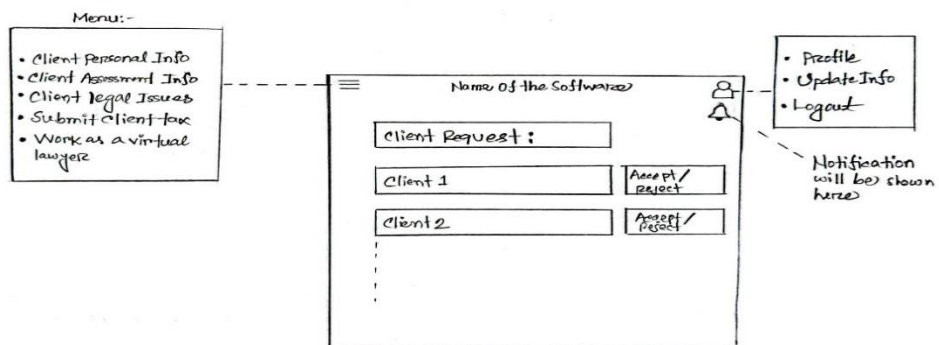
2. Profile option Sub-menu: (Information Update)

A hand-drawn wireframe of an 'Information Update' sub-menu. At the top left is a hamburger menu icon. At the top center is the text 'Name of Software'. At the top right are two icons: a person icon and a bell icon. Below these is the title 'Personal Information:'. This is followed by a dashed rectangular box for input. Below that is the title 'Asset Information:'. This is followed by another dashed rectangular box for input. At the bottom center is a rectangular button labeled 'Update'.



Lawyers

1. Default login page for lawyer:



5. Lawyer Payment:

Name of Software

Appointed lawyer:

1. Lawyer name Ask for Payment

Make Payment

Payment Details:

6. Ask Query:

Name of Software

FAQ:

1.
2.
3.
⋮

Want to know more? Live consultancy

or

Send

1. Client Personal Info: (Lawyer)

Name of Software

Client Personal Info:

Name:

Email:

Address:

⋮

Documents:

2. Client Assessment Info: (Lawyer)

Name of Software

Asset Information

calculate tax

3. Client Legal Issues: (Lawyer)

Hand-drawn UI sketch for 'Client Legal Issues' screen. The header shows a hamburger menu, 'Name of Software', a user icon, and a bell icon. The main content area has two buttons: 'Add New Documents' and 'Change legal Documents'. At the bottom is a 'View' button.

1. Profile update: (Lawyer)

Hand-drawn UI sketch for 'Profile update' screen. The header shows a hamburger menu, 'Name of Software', a user icon, and a bell icon. The main content area has a 'Profile Update' button, followed by input fields for 'Add New Email', 'New Password', and 'Old Password'. At the bottom is an 'Edit' button.

4. Submit Client Tax: (Lawyer)

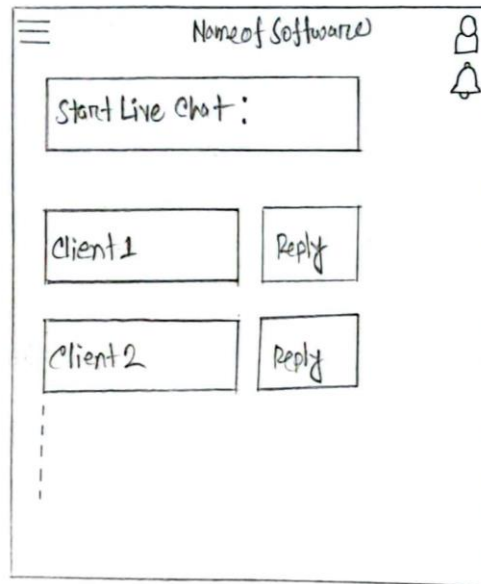
After, calculated Tax page:

Hand-drawn UI sketch for 'Submit Client Tax' screen. The header shows a hamburger menu, 'Name of Software', a user icon, and a bell icon. The main content area has two buttons: 'Client Assessment' and 'Calculated Tax'. At the bottom are 'Back' and 'Submit' buttons.

2. Information Update: (Lawyer)

Hand-drawn UI sketch for 'Information Update' screen. The header shows a hamburger menu, 'Name of Software', a user icon, and a bell icon. The main content area has a 'Personal Information' button, followed by several horizontal lines for text input. Below that is a 'Legal Documents' button, followed by more horizontal lines. At the bottom is an 'Update' button.

5. Works as a virtual Lawyer;



Tar official

1. After a successful Login.

official Logo Software Name Edit Profile
Answer queries

Verify Client Assessment

1. Name/Username verify Block verify Unblock

2 . . .

3 . . .

2. Verification page

official Logo Software name Bell icon

Client Info:-

1. Name:

2. Assets:

3 . . .

Verify

7. Test Case

Project Name: Income Tax Return Assessment		Test Designed by: Md. Omar Faruk Sakib		
Test Case ID: S_1		Test Designed date: 22-03-23		
Test Priority: Medium		Test Executed by:		
Module Name: Lawyer Sing Up Session		Test Executed date:		
Test Title: verify Sing Up with valid Name, D.O.B, Address, Phone, NID (Upload), TIN (Upload), Passport Num (Upload), Lawyer License (Upload) and Driving License (Upload)				
Description: Test website Lawyer Sing Up page				
Precondition (If any): User must have valid Name, D.O.B, Address, Phone, NID (Upload), TIN (Upload), and Lawyer License (Upload).				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Enter Name 3. Enter D.O.B 4. Enter Address 5. Enter Phone 6. Enter NID(Upload) 7. Enter TIN(Upload) 8. Lawyer License (Upload)	Name: Sakib D.O.B: 21-01-2001 Address: Lahini, Kushtia Phone: 01732546538 NID: 0855464556 TIN: 45646 Lawyer License: 5469676	User should Sing Up into the application		
Post Condition: User is validated with database and successfully Sing Up to account. The account session details are Lawyer Sing Up in the database.				

Project Name: Income Tax Return Assessment		Test Designed by: Md. Omar Faruk Sakib		
Test Case ID: S_2		Test Designed date: 22-03-23		
Test Priority: Medium		Test Executed by:		
Module Name: Tax payer Sing Up Session		Test Executed date:		
Test Title: verify Sing Up with valid Name, D.O.B, Address, Email, Phone, NID (Upload), TIN (Upload), Passport Num (Upload) and Driving License.				
Description: Test website Tax payer Sing Up page				
Precondition (If any): User must have valid Name, D.O.B, Address, Email, Phone, NID (Upload) and TIN (Upload).				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Enter Name 3. Enter D.O.B 4. Enter Address 5. Enter Email 6. Enter Phone 7. Enter NID(Upload) 8. Enter TIN(Upload)	Name: Akib D.O.B:23-01-2001 Address: Bottola, Kushtia Phone: 01735546538 NID:08545464556 TIN:45646654	User should Sing Up into the application		

	Lawyer License: 5469676			
Post Condition: User is validated with database and successfully Sing Up to account. The account session details are Tax Payer Sing Up in the database.				

Project Name: Income Tax Return Assessment			Test Designed by: Md. Omar Faruk Sakib	
Test Case ID: L_1			Test Designed date: 22-03-23	
Test Priority: High			Test Executed by:	
Module Name: Login Session			Test Executed date:	
Test Title: verify login with valid username and password				
Description: Test website login page				
Precondition (If any): User must have valid username and password				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Enter userld 3. Enter password 4. Click submit	Username: 945646546 Password: 5465	User should login into the application		
Post Condition: User is validated with database and successfully login to account. The account session details are logged in the database.				

Project Name: Income Tax Return Assessment			Test Designed by: Satyajit Das	
Test Case ID: FR_1			Test Designed date: 22/03/23	
Test Priority: Medium			Test Executed by:	
Module Name: Taxpayer profile Update			Test Executed date:	
Test Title: reset userID and password for each profile				
Description: Test profile update page				
Precondition (If any): To reset from update profile page, user must need to enter the old password				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the software 2. Enter new username or 3. Enter new password 4. Click update	userID: SD8171 Old Password: 321sD@# New Password: Sds321123!@#	User should login out from the application initially.		

Post Condition: Newly set upped password is updated on database. The account session details are logged in the database.

Project Name: Income Tax Return Assessment		Test Designed by: Satyajit Das		
Test Case ID: FR_2		Test Designed date: 22/03/23		
Test Priority: High		Test Executed by:		
Module Name: Taxpayer Information Update		Test Executed date:		
Test Title: Update personal and Asset information				
Description: Test Information Update page				
Precondition (If any): User must have some mandatory prior asset and personal information				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Click on Information Update 2. Check info list which is need to be updated 3. Enter update	Example (Personal): Pre. Passport Expire date: 11/04/23 New Passport Expire date: 11/04/28 Example (Asset): Pre. Shop land area: Habiganj, Khatian No 328 Now Shop land area: blank (suppose it was sold)	New passport expire date is saved and sold asset information removed.		
Post Condition: Updated asset information should save in the database and if any uploaded document is updated then it should be replaced on cloud storage.				

Project Name: Income Tax Return Assessment		Test Designed by: Satyajit Das		
Test Case ID: FR_3		Test Designed date: 22/03/23		
Test Priority: High		Test Executed by:		
Module Name: Lawyer Payment by Taxpayer		Test Executed date:		
Test Title: Show lawyer payment details and make payment				
Description: Test Lawyer Payment page				
Precondition (If any): A lawyer is previously appointed.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Click on Ask for payment 2. Enter make payment	N/A	For “Ask for Payment”: A detail information should be shown. For “Make Payment”:		

		Redirect to third party payment page		
Post Condition: A mail will be sent to the Lawyer registered email with payment details from that third party payment authority (Like: SSLcommerz)				

Project Name: Income Tax Return Assessment		Test Designed by: Satyajit Das		
Test Case ID: FR_4		Test Designed date: 22/03/23		
Test Priority: Low		Test Executed by:		
Module Name: Ask query		Test Executed date:		
Test Title: Show FAQ and ask new query				
Description: Test Ask query page				
Precondition (If any): N/A				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Click on the query textbox 2. Enter send	In textbox: “Can I resubmit my assessment after a successful payment? “	In Message Box: “Your query is successfully generated. Keep patience, please.”		
Post Condition: A notification should pop up on income tax officials’ notification icon				

Project Name: Income Tax Return Assessment		Test Designed by: Nawshin Nasir		
Test Case ID: TP_1		Test Designed date: 3/22/2023		
Test Priority: High		Test Executed by:		
Module Name: Calculate Tax		Test Executed date:		
Test Title: verify if the system is assessing the provided documents and calculating the tax properly.				
Description: Test calculate tax page				
Precondition (If any): User must upload all documents				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Login 2. Calculate Tax	Uploaded asset documents.	The tax should be calculated.		
Post Condition: Tax is calculated successfully and the detailed assessment is saved to the cloud storage.				

Project Name: Income Tax Return Assessment			Test Designed by: Nawshin Nasir	
Test Case ID: TP_2			Test Designed date: 3/22/2023	
Test Priority: Low			Test Executed by:	
Module Name: Track Assessment			Test Executed date:	
Test Title: verify if the system is tracking the assessment appropriately.				
Description: Test the tracking page				
Precondition (If any): User must submit the assessment and have the verified status				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Submit the assessment 2. Click menu 3. Select track assessment option	Submission	The assessment should be tracked successfully.		
Post Condition: User successfully tracked the verification of the assessment.				

Project Name: Income Tax Return Assessment		Test Designed by: Nawshin Nasir		
Test Case ID: TP_3		Test Designed date: 3/22/2023		
Test Priority: Medium		Test Executed by:		
Module Name: Assessment certificate download		Test Executed date:		
Test Title: verify if the system is successfully downloading the assessment certificate appropriately.				
Description: Test the downloading page				
Precondition (If any): Tax assessment must be completed				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Click menu 2.Select download assessment certificate option 3. Click download	Assessment Certificate	The download should be placed successfully		

Post Condition: User successfully downloaded the assessment.

Project Name: Income Tax Return Assessment		Test Designed by: Md Abdullah Al Noman		
Test Case ID: LW_1		Test Designed date: 3/22/2023		
Test Priority: Medium		Test Executed by:		
Module Name: Update lawyer information		Test Executed date:		
Test Title: verify if the lawyer can successfully update the information				
Description: Test the update info page				
Precondition (If any): User must login				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Login 2. Click Profile 3. Insert new information 4.Click update button	Personal Information (Name, ID, Password)	The user should be able to update information.		
Post Condition: Lawyer successfully updated the personal information.				

Project Name: Income Tax Return Assessment			Test Designed by: Md Abdullah Al Noman		
Test Case ID: LW_2			Test Designed date: 3/22/2023		
Test Priority: Medium			Test Executed by:		
Module Name: Lawyer Calculate Tax			Test Executed date:		
Test Title: verify if the lawyer can pay taxes of clients					
Description: Test the assessment calculation					
Precondition (If any): Lawyer must accept client request					
Test Steps		Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Login 2. Accept request 3. Calculate tax 4. Click calculate button	Asset Information	The lawyer should be able to calculate tax.		
Post Condition: Lawyer successfully calculated the tax assessment.				

Project Name: Income Tax Return Assessment			Test Designed by: Md Abdullah Al Noman	
Test Case ID: LW_3			Test Designed date: 3/22/2023	
Test Priority: Medium			Test Executed by:	
Module Name: Update lawyer information			Test Executed date:	
Test Title: verify if the lawyer can successfully update the information				
Description: Test the update info page				
Precondition (If any): User must login				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Login 2. Click Profile 3. Insert new information 4.Click update button	Personal Information (Name, ID, Password)	The user should be able to update information.		
Post Condition: Lawyer successfully updated the personal information.				

Project Name: Income Tax Return Assessment	Test Designed by: Md Abdullah Al Noman
Test Case ID: LW_4	Test Designed date: 3/22/2023
Test Priority: High	Test Executed by:
Module Name: Submit tax assessment	Test Executed date:
Test Title: verify if the lawyer can successfully submit the assessment	
Description: Test the submission page	
Precondition (If any): Lawyer must calculate tax	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Click Calculate tax 2. Click submit button	Tax calculation	The lawyer should be able to submit tax.		
Post Condition: Lawyer successfully submitted tax assessment.				

Project Name: Income Tax Return Assessment		Test Designed by: Maishara Monjori		
Test Case ID: TO_1		Test Designed date: 22/03/23		
Test Priority: High		Test Executed by:		
Module Name: Tax official Profile		Test Executed date:		
Test Title: verify the tax officials home page (homepage will display list of clients)				
Description: Test Tax officials homepage				
Precondition (If any): Tax officials should login successfully				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Login using username and password 3. Enter homepage	1. Username 2. Password	1. Tax official's homepage will display a list of clients request for verification purpose. 2. Queries from clients will be shown on the notification icon. 3. Verify/Block option will be available beside the request.		
Post Condition: Users are validated with database for Tax Officials and successfully login to their account. Tax Officials will have the access to block Client's database.				

Project Name: Income Tax Return Assessment			Test Designed by: Maishara Monjori	
Test Case ID: TO_2			Test Designed date: 22/03/23	
Test Priority: Medium			Test Executed by:	
Module Name: Update Profile			Test Executed date:	
Test Title: verify the Users can update their information				
Description: Test the Profile icon				
Precondition (If any): Tax officials should login successfully				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Click the Profile icon 2. Enter Update Profile Page	userID, Password	1. Profile information will be displayed		

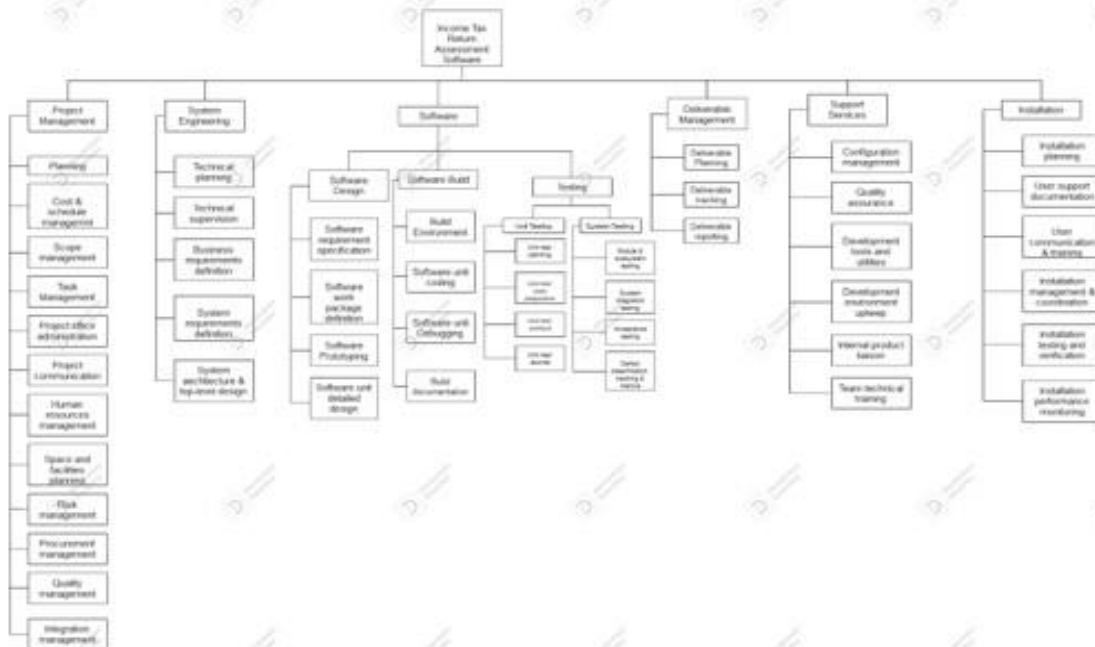
		2. User should be able to change/update information example: name, Password. 3. User can setup privacy settings		
Post Condition: Database for Tax officials will be updated successfully. Updated information will be shown on the profile as well.				

Project Name: Income Tax Return Assessment		Test Designed by: Maishara Monjori		
Test Case ID: TO_3		Test Designed date: 22/03/23		
Test Priority: Medium		Test Executed by:		
Module Name: Answer Queries		Test Executed date:		
Test Title: verify the queries are displayed on Tax official’s homepage				
Description: Test notification icon				
Precondition (If any): Clients should send queries to the Tax Officials.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Click the notification icon 2. Enter the notification page	Queries sent from clients	1. List of queries from client’s will be shown. 2. User can answer queries by writing on the answer box		
Post Condition: Answered queries will be sent to the specific client. Unanswered queries will be stacked.				

Project Name: Income Tax Return Assessment		Test Designed by: Maishara Monjori		
Test Case ID: TO_4		Test Designed date: 22/03/23		
Test Priority: High		Test Executed by:		
Module Name: Verify Clients request		Test Executed date:		
Test Title: Clients Verification Request				
Description: Test Verification Process				
Precondition (If any): Clients should request for verification				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Click the notification icon 2. Enter the notification page	1. Requests sent from client for verification. 2. Uploaded documents of clients	1. After accepting request, Client’s information will be available to the Income Tax Official.		

		2. User will verify the assets documents of the clients. 3. Users will verify tax assessment and provide assessment certificate. 4. Users will verify Phases of Track Assessment	
Post Condition: Verified request will be cleared from the homepage list. Required assessments certificates/approval will be sent to required clients.			

8. Work Breakdown Structure:



Constructive cost Model (COCOMO):

Let's assume Source Line of Code is 4000.

So, effort need to be, $PM = 2.4 (4000/1000)^{1.05} = 10.289$

Development time, $DM = 2.5 * (PM)^{0.38} = 6.0623 = 6$

Required number of people, $ST = PM/DM = 1.697 = 2$

That means we need to work for (4*6) =24 weeks.

9. Timeline Chart (Project Plan)-1

We ek Person	Pregame Phase						Development												Postgame Phase					
	Planning			Architecture			Sprint1				Sprint2				Sprint3									
	We ek 1	We ek 2	We ek 3	We ek 4	We ek 5	We ek 6	We ek 7	We ek 8	We ek 9	We ek 10	We ek 11	We ek 12	We ek 13	We ek 14	We ek 15	We ek 16	We ek 17	We ek 18	We ek 19	We ek 20	We ek 21	We ek 22	We ek 23	We ek 24
A :S																								
B : N																								
C: S & N																								
D: S & N																								
E: S & N																								
F: S & N																								
G :S																								
H : N																								
I: S																								

Here, S means Satyajit & N means Noman (As staffing necessary is 2)

A: Project initiation, Scoping, requirements gathering and planning

B: Design, product backlog creation and sprint planning

C: Requirements for each sprint

D: Analysis for each sprint

E: Development for each sprint

F: Testing for each sprint

G: Integration testing

H: System testing

I: Release preparation and launch

10. EVA Analysis:

Task	Planned effort	Actual effort
1	10	11
2	8	10
3	7	5
4	9	7
5	7.5	6
6	4	7
7	14	11
8	6	7
9	9.5	10.5
10	8.5	10
11	6	---
12	10	---
13	5	---
14	8	---
15	6	---

Given Total Task=54

Effort Estimated=309

BAC=309

$SPI = BCWP/BCWS = 83.5/118.5 = 0.704641$

$SV = BCWP - BCWS = 83.5 - 118.5 = -35$ person-day

$CPI = BCWP / ACWP = 83.5 / 84.5 = 0.99$

$CV = BCWP - ACWP = 83.5 - 84.5 = -1$ person-day

% schedule for completion = $BCWS / BAC = (118.5 / 309) * 100\% = 38.34\%$

% complete = $BCWP / BAC = (83.5 / 309) * 100\% = 27.02\%$.

11. Timeline Chart-2

Pre-Game Phase:

Work Task	Week 1				Week 2				Week 3				Week 4				Week 5				Week 6			
Project scope is defined	■	■	■																					
Requirements are gathered				■	■	■	■	■																
Project plan is created								■	■	■	■	■												
Project team is built													■	■	■	■								
User stories are developed																■	■	■	■	■				
Product backlog is created																				■	■	■	■	■
Sprint planning is conducted																								■

Game Phase:

Work Task	Sprint 1				Sprint 2				Sprint 3			
	Week 7 & 8		Week 9 & 10		Week 11 & 12		Week 13 & 14		Week 15 & 16		Week 17 & 18	
Login features is developed	■	■	■	■								
Data input feature is developed			■	■	■	■						
Data validation feature is developed					■	■	■	■				
Report generation feature is developed							■	■	■	■		
Data export feature is developed									■	■	■	■
Payment feature is developed											■	■

Post-Game Phase:

Work Task	Week 19				Week 20				Week 21				Week 22				Week 23				Week24			
Sprint review is conducted																								
Sprint retrospective is conducted																								
User acceptancy testing is conducted																								
Software is deployed																								
User training is provided																								
Post release review is conducted																								

12. Risk Management Table

Risks	Category	Probability	Impact	RMMM
Size estimate maybe significantly low	PS	70%	2	
Larger number of users than planned	PS	20%	3	
Less reuse than planned	PS	50%	2	
End user resists system	BU	30%	2	
Delivery deadline will be tightened	BU	75%	1	
Funding will be lost	CU	30%	1	
Customer will change requirements	PS	25%	2	
Technology will not meet expectations	TE	20%	1	
Lack of Training on tools	DE	50%	3	
Staff inexperienced	ST	30%	3	
Staff turnover will be high	ST	60%	2	
Personnel shortfalls	ST	50%	2	
Unrealistic time and cost estimates	BU	35%	1	
Developing the wrong software functions	PR	17%	1	
Developing the wrong interface	PR	20%	2	
Gold plating	PR	30%	2	
Late changes to requirements	CU	60%	2	

Shortfalls in externally performed tasks	DE	40%	3	
Real time performance problems	ST	45%	3	
Development technically too difficult	TE	60%	2	
Data loss	DE	45%	1	
Handling sensitive information	DE	40%	2	
Delayed software development due to lack of resources	DE	20%	3	
Inaccurate tax calculations leading to legal and financial consequences	DE	50%	1	
Data integrity issues due to modifications in software	PS	30%	2	
Slow response due to large software	PS	60%	4	
Maintenance and upgrade difficulties of large software	PS	50%	3	
Cost overrun due to ineffective communication with customer	CU	10%	3	
Insufficient user training resulting in user errors	CU	40%	3	
Miscalculation of taxes	CU	10%	1	
Data breach for the software	TE	30%	1	
Data loss due to hardware or software failure	TE	10%	1	
Failure to meet tax filling deadlines due to software issues	TE	20%	3	
Increased technical debt due to constraints imposed by management	BU	10%	4	
Lack of stake holders	BU	30%	2	
Integration issues with third party systems	BU	70%	3	
Inadequate software testing leading to incorrect tax assessment	ST	40%	2	
Inadequate communication leading to misunderstanding	ST	40%	3	
Sudden change of team leading to confusions and conflicts	ST	20%	2	
Poor software quality that does not meet the user's needs	PR	30%	2	
Budget overrun due to unforeseen expenses	PR	70%	3	
Lack of consistency of the development organization to meet regulatory or compliance requirements	PR	10%	3	

Impact values:

- 1- Catastrophic
- 2- Critical
- 3- Marginal
- 4- Negligible

