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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: Summer_23_24		**Section:**	**Group Number:**	
SN	Student Name	Student ID	Contribution (CO3+CO4)	Individual Marks
1	Avishek Chanda Pratyay	21-45489-3		
2	Dipta Banik	21-45520-3		
3	Mehedi Hasan	21-45513-3		
4	Sadia Afroz Shuprova	22-46462-1		
5	Md. Hasibul Hassan	22-46289-1		

The project will be Evaluated for the following Course Outcomes

CO3: *Select* appropriate software engineering models, project management roles and their associated skills for the complex software engineering project and evaluate the sustainability of developed software, taking into consideration the societal and environmental aspects	Total Marks	
Appropriate Process Model Selection and Argumentation with Evidence	[5 Marks]	
Evidence of Argumentation regarding process model selection	[5Marks]	
Analysis the impact of societal, health, safety, legal and cultural issues	[5Marks]	
Submission, Defense, Completeness, Spelling, grammar and Organization of the Project report	[5Marks]	
CO4: *Develop* project management plan to manage software engineering projects following the principles of engineering management and economic decision process	Total Marks	
Develop the project plan, its components of the proposed software products	[5Marks]	

Identify all the activities/tasks related to project management and categorize them within the WBS structure. Perform detailed effort estimation correspond with the WBS and schedule the activities with resources	[5Marks]	
Identify all the potential risks in your project and prioritize them to overcome these risk factors.	[5Marks]	

Description of Student's Contribution in the Project work

Student Name: Avishek Chanda Pratyay Student ID: 21-45489-3 Contribution in Percentage (%): 20% Contribution in the Project: ▪ Topic Domian ▪ Basic Functionality _ Avishek Chanda Pratyay__ Signature of the Student
Student Name: Mehedi Hasan Student ID: 21-45513-3 Contribution in Percentage (%):20% Contribution in the Project: ▪ Impact ▪ Role & Responsibilities _ Mehedi Hasan__ Signature of the Student
Student Name: Dipta Banik Student ID: 21-45520-3 Contribution in Percentage (%):20% Contribution in the Project: ▪ Domian Research ▪ Modeling _ Dipta Banik__ Signature of the Student
Student Name: Sadia Afroz Shuprova Student ID: 22-46462-1 Contribution in Percentage (%):20% Contribution in the Project:

▪ Project Identification ▪ Modeling _ Sadia Afroz Shuprova____ Signature of the Student
Student Name: Md. Hasibul Hassan Student ID: 22-46289-1 Contribution in Percentage (%):20% Contribution in the Project: ▪ Information Selection ▪ Model Selection __ Md. Hasibul Hassan _ Signature of the Student

2. SOFTWARE DEVELOPMENT LIFE CYCLE

2.1 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.

2.2 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.

In the Scrum process model for the development of the Income Tax Return Assessment Software application, key roles and responsibilities are defined to ensure effective collaboration and progress. The roles and responsibilities are given below:

1. **Scrum Master:** The scrum master 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. **Scrum Development team:**
    - Software Architect: The software architect is responsible for designing the software system's architecture, including selecting the appropriate technologies, creating a highlevel design, and ensuring that the design is scalable, maintainable, and secure
    - 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.
    - 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.
    - 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.
    - 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:

1.3. Product Owner:

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.

1.4. Product Impact:

1.4.1. Societal Impact

1. **Increased Compliance and Transparency**:
    - **Automation of Tax Filing**: Streamlining the tax filing process encourages more people to file their returns accurately and on time.
    - **Reduced Errors**: Automated systems minimize human errors, leading to more accurate tax assessments and a fairer system.
    - **Enhanced Transparency**: Digital records and automated assessments increase transparency, reducing opportunities for tax evasion and corruption.
2. **Improved Public Services**:
    - **Revenue Generation**: Better compliance leads to higher tax revenues, which governments can reinvest in public services such as healthcare, education, and infrastructure.
    - **Resource Allocation**: Governments can more effectively allocate resources based on accurate revenue data, improving overall societal well-being.
3. **Employment Opportunities**:
    - **Tech Industry Growth**: Development, maintenance, and upgrading of tax software create jobs in the tech sector.
    - **Financial Services**: Increased demand for professional advice on using these tools spurs growth in the financial advisory industry.

1.4.2. National Impact

1. **Economic Efficiency**:
    - **Reduced Administrative Costs**: Automated systems lower the cost of processing tax returns, allowing governments to redirect resources to other critical areas.
    - **Enhanced Economic Planning**: Accurate tax data enables better economic forecasting and planning, leading to more effective fiscal policies.
2. **Tax Revenue Optimization**:
    - **Broader Tax Base**: Easier filing processes can bring more people into the tax net, increasing the tax base and optimizing revenue collection.
    - **Combating Evasion**: Advanced algorithms and data analytics help in identifying and reducing tax evasion, leading to more stable revenue streams.
3. **Technological Advancements**:
    - **Innovation Incentives**: The need for constant updates and improvements in software drives technological innovation within the country.
    - **Global Competitiveness**: Efficient tax systems can make a country more attractive to foreign investors, boosting the national economy.

1.4.3. Family Life Impact

1. **Time and Cost Savings**:
    - **Simplified Process**: Families spend less time and money on preparing and filing tax returns, freeing up resources for other needs.
    - **Financial Management**: Better understanding of tax obligations and potential savings can improve household financial management and planning.
2. **Reduced Stress**:
    - **Ease of Use**: User-friendly interfaces and support tools reduce the stress associated with tax filing, leading to improved mental well-being.
    - **Assured Compliance**: Knowing their taxes are accurately filed and compliant with regulations reduces anxiety for families.
3. **Financial Literacy**:
    - **Educational Tools**: Many tax software packages include educational resources that improve users' financial literacy and understanding of the tax system.
    - **Budgeting and Planning**: Tools that help track income, deductions, and potential refunds assist families in budgeting and financial planning.

Rubric for Project Assessment (CO3)

Criteria	Marks distribution (Max 3X5= 15)				Acquired Marks
	Inadequate (1-2)	Satisfactory (3)	Good (4)	Excellent (5)	
Selection of Software Engineering Models	Does not articulate a position or argument of choosing appropriate model. Does not present any evidence to support the arguments for the choice of the model	Articulates a position or argument for choosing models that is unfocused or ambiguous. Presents incomplete/vague evidence to support argument for model choice	Articulates a position or argument of choosing models that is limited in scope. Does not present enough evidence to support the argument for the choice of the model	Clearly articulates a position or argument for the choosing software engineering models. Presents sufficient amount of evidence to support argument for the model selection	
Role identification and Responsibility Allocation	The project has poor project management plans for identifying roles and assigning the responsibilities	Identify few roles in the project management where some of the roles are left alone with any project responsibilities	Identify most of the roles in the project management and assign their responsibilities	Well planned project with proper role identification and responsibility allocation in the project management activities	
Impact identification					
Formatting and Submission	Project report is not complete and Several errors in spelling and grammar. Present a Confusing	Some errors in spelling and grammar. Some problems	Few errors in spelling and grammar. Presents most of the details in	Project report is complete and No errors in spelling and grammar. Consistently	

	organization of concepts, supporting arguments, and real-life example. Sentences rambling, and details are repeated.	of organizing the answer in a logical order of defining, elaborating, and providing real-life examples.	a logical flow of organization in definition, details, and example.	presents a logical and effective organization of definition, details, and real-life example of the topic.	
				Acquired marks:	
				CO Pass / Fail:	

Rubric for Project Assessment (CO4)

Marking Criteria	**Marks Distribution (Maximum 3X5=15)**				**Acquired Marks**
	Inadequate (1-2)	**Satisfactory (3)**	**Good (4)**	**Excellent (5)**	
Project Planning	No background information regarding the project is given; project goals and benefits are missing.	Insufficient background information is given; project goals and benefits are poorly stated	Sufficient background information is given; the purpose and goals of the project are explained.	Thorough and relevant background information is given; project goals are clear and easy to identify.	
Effort Estimation and Scheduling	Student vaguely discuss the impact of societal, health, safety, legal and cultural issues in their project	Student provided with partial relevance to the impact of societal, health, safety, legal and cultural issues in their project	Student fairly provided the analysis to the impact of societal, health, safety, legal and cultural issues in their project	Student comprehensively provided the analysis to the impact of societal, health, safety, legal and cultural issues in their project	
Risk Management	Ambiguous representative example.	Partially identify / indicate towards real-life example.	Real-life example is fairly connected towards the definition.	Comprehensively defend with real life example.	
				Acquired Marks:	
				CO Pass / Fail:	