

American International University-Bangladesh (AIUB)  
**Department of Computer Science  
Faculty of Science & Technology (FST)**

**Centralized Medical Application - CMA**

A Software Engineering Project Submitted

By

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| --- | --- | --- | --- | --- |
| **Semester: Summer\_21\_22** | | **Section:** | **Group Number:** | |
| SN | Student Name | Student ID | Contribution (CO1+CO2) | Individual Marks |
| 07 | Md Shahadot Hossain Shakib | 20-42385-1 |  |  |
| 08 | Shadril Hassan Shifat | 20-42451-1 |  |  |
| 09 | Abu Shaleh Md Kaium | 20-42475-1 |  |  |
| 10 | Gourob Kumar Das | 20-42482-1 |  |  |
| 11 | Ummee Zinat Refaiat | 20-42487-1 |  |  |

The project will be Evaluated for the following Course Outcomes

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| CO1: *Analyze* the impact of software engineering models over various context of software development to assess societal, health, safety, legal and cultural issues. | Total Marks | |
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| Project Background Analysis and feasibility (needs, goal, benefits, etc.) | [5 Marks] |  |
| Analysis the impact of societal, health, safety, legal and cultural issues | [5Marks] |  |
| Review of existing Studies and Relevant Example | [5Marks] |  |
| CO2: *Explain* 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. | 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

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| Student Name: Md Shahadot Hossain Shakib  Student ID: 20-42385-1  Contribution in Percentage (15%):  Contribution in the Project:   * Background to the problem. * Solution to the problem.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Signature of the Student |
| Student Name: Shadril Hassan Shifat  Student ID: 20-42451-1  Contribution in Percentage (45%):  Contribution in the Project:   * Background to the problem. * Solution to the problem. * Process Model. * Project role identification and responsibilities.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Signature of the Student |
| Student Name: Abu Shaleh Md Kaium  Student ID: 20-42475-1  Contribution in Percentage (30%):  Contribution in the Project:   * Background to the problem. * Solution to the problem. * Project role identification and responsibilities.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Signature of the Student |
| Student Name: Gourob Kumar Das  Student ID: 20-42482-1  Contribution in Percentage (15%):  Contribution in the Project:   * Background to the problem. * Solution to the problem.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Signature of the Student |
| Student Name: Ummee Zinat Refaiat  Student ID: 20-42487-1  Contribution in Percentage (15%):  Contribution in the Project:   * Background to the problem. * Solution to the problem.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Signature of the Student |

# PROJECT PROPOSAL

## Background to the Problem

Every citizen has to visit a doctor many times in their entire life. And the process of getting an appointment to meet the doctor and perform the tests is very time consuming and problematic due to different issues. The citizen has to book an appointment manually and then wait for his meeting time for a considerable period. When a citizen visits a doctor and the doctor prescribes him medicine or test, the data is stored on a hard paper, which can easily be lost or broken.

And the consequence of this is to re-visit the doctor or re-test the following tests that are a hassle and costly. A digital web-based system is capable of eliminating these complexities simultaneously will save both time and money.

## Solution to the Problem

It is commonly found that people suffer from the dilemma of whether they should go to the hospital or not when they think about the hassle of visiting a doctor. The process of getting a serial in a government hospital is very much more difficult nowadays. People have to stand in a queue for more than an hour. Then, after getting the serial some people do some politics to meet the doctor early. Again, taking tests and other stuff is difficult as well. And the patient has to suffer a lot if he/she lost his/her previous document. Sometimes some doctors and hospital authorities overcharge patients in terms of prescriptions, medicine, operations, etc. Standardization of these rates can resolve these issues. Again, sometimes people think that they may be patients with a particular disease. At that time, they go for a test and consult with the doctor.

A web-based application can resolve these issues carefully. It will assist citizens in performing their tasks more efficiently and will alleviate their fear of seeking treatment. Simultaneously, it will also reduce the discrimination in terms of treatment rate, meeting doctors, etc. The current paper-based method is very time-consuming, generates many problems, and leads to discrimination against citizens according to their needs. The web-based system will eliminate all complexities and provide an efficient way for citizens to receive proper treatment. This system will help citizens determine minor-level diseases without visiting a doctor. This system will end discrimination among different classes of people and make treatment equal for everyone.

There are some isolated apps like DIMS, DocTime, Arogga, SeekMed, and so on. All of them have their own characteristics and are built to meet specific needs. And they offer some particular features and offers that are not enough to solve these issues. To solve the problems listed above, we need a health application, which will be made to get rid of these problems.

# SOFTWARE DEVELOPMENT LIFE CYCLE

## Process Model

The main features of this project are as follows,

* Doctor appointment management and reservation.
* Prescription analysis and disease prediction.
* Citizen data management including personal details, treatment history, past disease.
* Blood Donation Management.
* Make Custom Exercise guide to the patients.

The doctor appointment management and reservation systems require a considerable amount of analysis before implementing the system. It is essential that the development pipeline be driven by a well-thought-out strategy, and the requirements should be thoroughly investigated. The prescription analysis and disease prediction systems in which the requirements will change based on requirements and user interface components are expected to be many and varied. The model that is most suitable is one that involves incremental development and possibly some UI prototyping. An agile model may be used for this system. The citizen data management includes personal details, treatment history, and past disease systems in which some complex data manipulation techniques will be used and the requirements are unknown. The blood donation management system, whose requirements are fairly well-known, will be combined with several other systems in a variety of settings. Because of this, a reuse-based model is probably the best fit. The system for making custom exercise guides for the patients is a system with a complex user interface and it must be stable and reliable. The requirements for this system are also unknown. An agile development strategy is the best choice, since the system's requirements will change over time as more people use it.

Based on the analysis above, we will select SCRUM method to develop this software. The SCRUM model is the best choice because most of the requirements are not well known and will change over time. In this model, first we will create a product backlog list that will contain all the requirements that are known to us. Then requirements will be prioritized and the amount of work required to accomplish them will be calculated. There will be ongoing additions to the product Backlog list, such as new items, better estimations, and new priority orders. The planning will include the project team, tools, and other resources. The high-level design of the system will be most prioritized. If an existing system needs to be improved, the Backlog items and any potential issues they may create are identified and the necessary adjustments will be made. The design review meeting will be conducted to look through the implementation suggestions, and all decisions will be made based on this review. It is anticipated that each Sprint would last anywhere from one week to one month. That’s how the error will be minimized.

For product development, Scrum is a framework that we may customize with our own methods. Scrum allows for the integration of XP as a best practice. Also, DSDM functions well in the context of a project, where there is more strict control over the scope of the work. Also, SCRUM's feedback loops are much more time efficient than FDD's. We can’t use WATERFALL model for this application development because the requirements are not well known and the plan is not fixed. So based on the above analysis, we can say that SCRUM model itself is simple. It's easy to understand the SCRUM rules, artifacts, events, and roles. That’s why we will choose SCRUM model in developing our proposed system.

## Project Role Identification and Responsibilities

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| **Roles** | **Responsibilities** |
| **SCRUM Master** | In our project, the SCRUM Master is in charge of ensuring that the project is carried out in accordance with the principles, values, and rules of SCRUM and that it progresses as planned. During the project lifecycle, the SCRUM Master will communicate with the project team, as well as the client and top management. Backlog management is one of the SCRUM Master's primary responsibilities for the Product Owner. Coaching the team to self-organize is one of the SCRUM Master's responsibilities to the development team. |
| **SCRUM Team** | In our project, the SCRUM Team size will be larger than three and less than nine. The team will be involved in effort estimation, creating Sprint Backlog, reviewing the product Backlog list and suggesting impediments that need to be removed from the project. Developers may have specialized skill within the team. |
| **Product Owner** | The Product Owner is the person in charge of the project's Product Backlog, which he / she manages, controls, and makes public. The Product Owner will be selected by the SCRUM Master. When creating a product backlog, the product owner is in charge of defining and prioritizing requirements. |
| **Customer** | The customer takes part in the tasks for product Backlog items for the system that is being built or improved. |
| **Management** | The project's management is in charge of making the final decisions and establishing the agreements, standards, and conventions that must be followed. Goals and requirements are also set with the help of management. |

## Rubric for Project Assessment (CO1)

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| Marking Criteria | Marks Distribution (Maximum 3X5=15) | | | | Acquired Marks |
| **Inadequate (1-2)** | **Satisfactory (3)** | **Good (4)** | **Excellent (5)** |
|  |  |  |  |  |  |
| Background  Analysis | 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. |  |
| Analysis the impact of societal, health, safety, legal and cultural issues | 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 |  |
| Existing Studies and Relevant Example | 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: | | | | |  |

## Rubric for Project Assessment (CO2)

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| Criteria | Marks distribution (Max 3X5= 15) | | | | Acquired  Marks |
| **Inadequate (1-2)** | **Satisfactory (3)** | **Good (4)** | **Excellent (5)** |
| Argumentation of Model selection with Evidence of Argumentation | 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 |  |
| Submission, Completeness, Spelling, grammar and Organization of the Project report | Project report is not complete and Several errors in spelling and grammar. Present a Confusing organization of concepts, supporting  arguments, and  real-life example.  Sentences rambling, and details are repeated. | Some errors in spelling and grammar. Some problems  of organizing the answer in a logical order of defining,  elaborating, and providing real-life examples. | Few errors in spelling and grammar. Presents most of the details in a logical flow of  organization in  definition,  details, and  example. | Project report is complete and No errors in spelling and grammar. Consistently  presents a logical  and effective  organization of definition,  details, and real-life example of  the topic. |  |
| Acquired marks: | | | | |  |
| CO Pass / Fail: | | | | |  |