American International University-Bangladesh (AIUB)

Faculty of Science and Technology (FST)
Department of Computer Science (CS)

SOFTWARE DEVELOPMENT PROJECT MANAGEMENT

Project, Fall 2022

PROJECT TITLE: CHILD CARE MANAGEMENT SYSTEM

SECTION: C

Under the supervision of

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Project Title:

CHILD CARE MANGEMENT SYSTEM

Introduction:

Background to the Problem:

Today, many families with young children must make a choice between spending a significant portion of their income on child care, finding a cheaper, but potentially lower-quality care option, or leaving the workforce altogether to become a full-time caregiver. Whether due to high cost, limited availability, or inconvenient program hours, childcare challenges drive parents out of the work. Infect, in 2016 alone, an estimated 2 million parents made career sacrifices due to problems with child care. In this modern time, our working parents are suffering from this problem that their child/kid are unsafe with alone home and with their maids.

Childcare challenges have become a barrier to work, especially for mothers, who disproportionately take on unpaid caregiving responsibilities when their families cannot find or afford childcare. In Bangladesh, most parents have limited knowledge of child care and rearing. Our project objects to solve the childcare system for working parents. The name of our system project is “CLOUD CARE”.

Objectives:

This project is for the children. Our system can use every parent who want take care of their child virtually and this application is the most comprehensive all-in-one integrated solution. This project can help many people and change the lives. And our future generation will safe with the concern.

so, our software will help you to take care of your baby with an educated moderator. Specifically, this was created for childcare attendance tracking, accounting, and tuition payments.

Key features of CLOUD CARE Manager include robust accounting and receivable management, a fully integrated ACH& credit card processing and an employment center that seamlessly tracks, employee hours, certifications, and training.

Management Software provides a host of features that include a mobile app, a parent portal, child schedules, and staff, schedules, medical records, billing, and payments, among others. The target group fusers of our solution are educated jobless people, and working parents, and the main concern is our children to keep them safe.

4.0 Justification:

REQUEIREMNT SPECIFICATION

System Features

List down the system functional requirements that describes the system’s functionalities:

1 User Registration (for parents)

There only parents will register their information. After entering into the website or in the app there will be an interface where some option will be available. Login, register, child consulting hour, moderator performance, communication, invoicing and payment, learning and assessment.

1.2 After clicking on register, a new interface will appear and it will name, mobile number, email address.

1.3 After entering the details, a username and password will be sent to user's email.

2. Login

The system will allow users to login into the system with their given username and password. After a successful login the homepage will appear.

2.1 Users must change initially assigned login password after the first successful login.

2.2 If the user inserts wrong password, he will be given a warning and after three unsuccessful attempts the account will be locked and a new password will be sent to user's email and mobile number and by this code the user can login to the system.

2.3 If the user forgets password, he can request for a new password by clicking forget password option. After that, the system will ask his/her mobile number or email to verify whether the number or email belongs to an account or not. If matches then a new password will be sent to user's mobile number or email as per his/her choice otherwise system will show an invalid message.

3 User Management (for admin)

3.1 Only admin will be allowed to create, modify or delete data in the system.

3.2 Each unsuccessful attempt by a user to access any data of information will be monitored.

3.3 Users will get a message if there is any change of information in his/her profile.

3.4 Admin will be approved post, track the student update, update daily reports.

4 Student activates

4.1 There will be some activates for children. Like virtual class, student attendance, nap, potty, announcement,

photo, diary, today's mood, reminder, art and craft, food, observation.

4.2 There the activates will be tracked by moderator. They will help the student/children.

5 Contacts

5.1 Parents can contract with admin or moderators

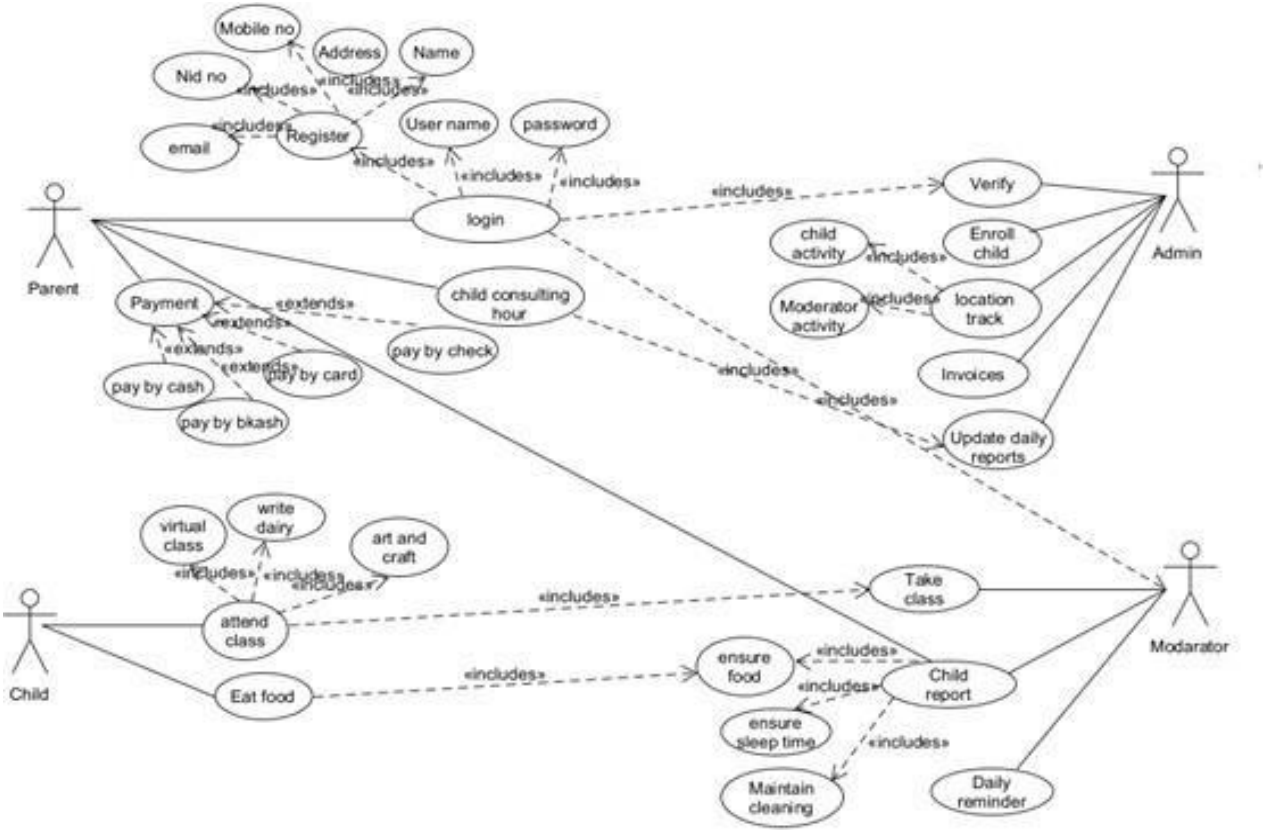
5.2 There will be a staff communication.

5.3 There will be leaves application.

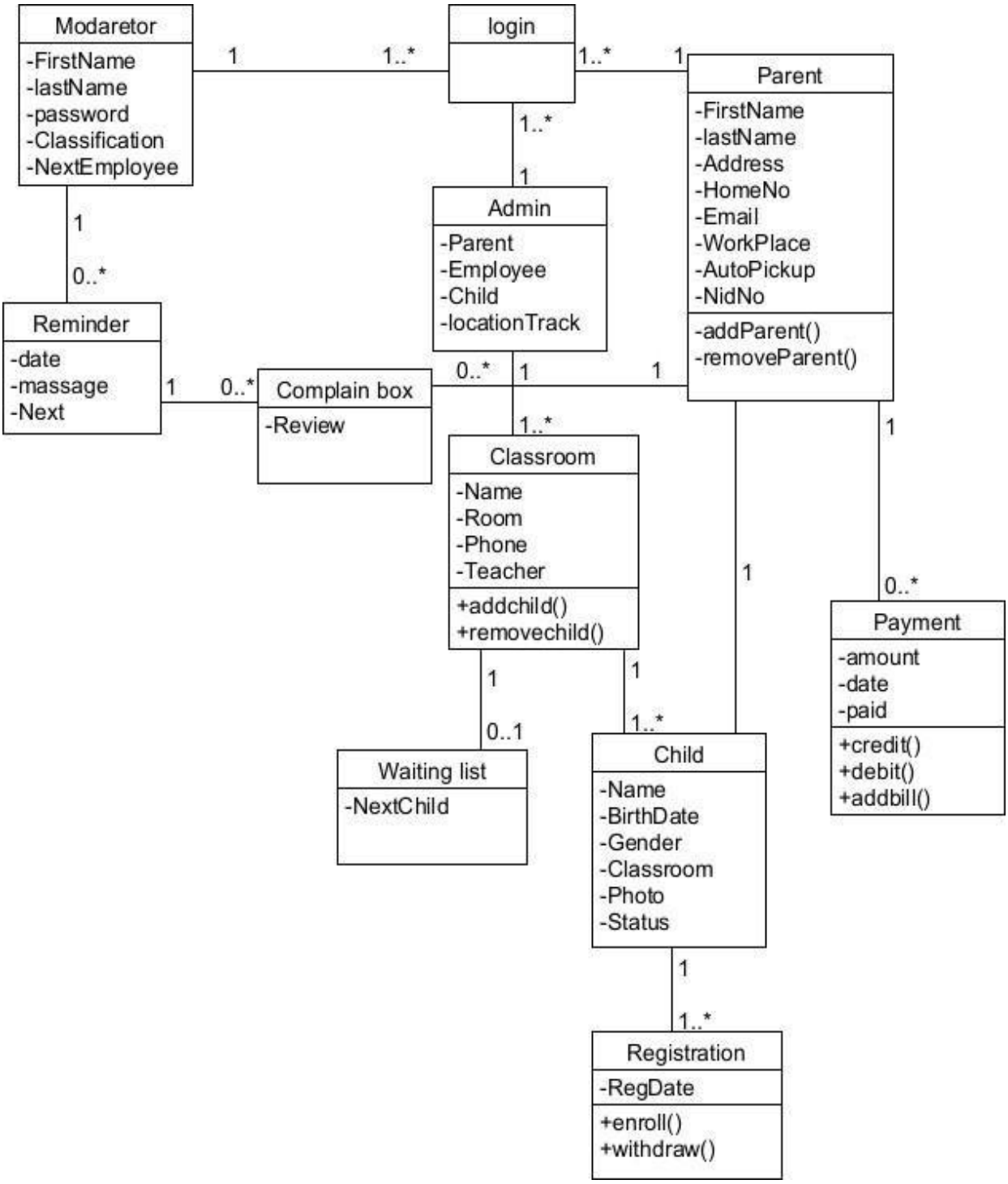
5.4 There will be a payment option

5.0 Systems Overview: (Includes Use case diagram)

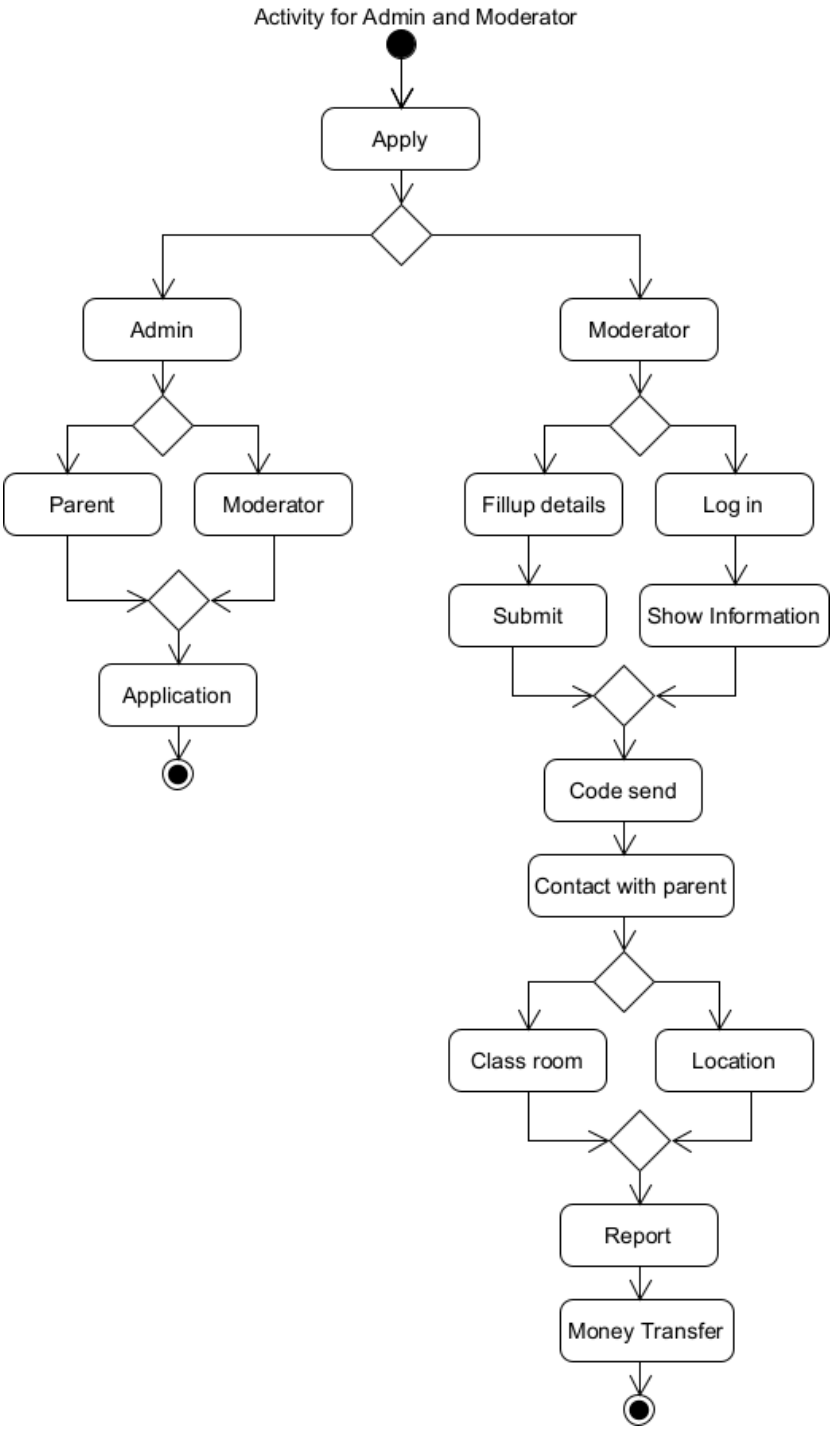
Use Case Diagram Scenario



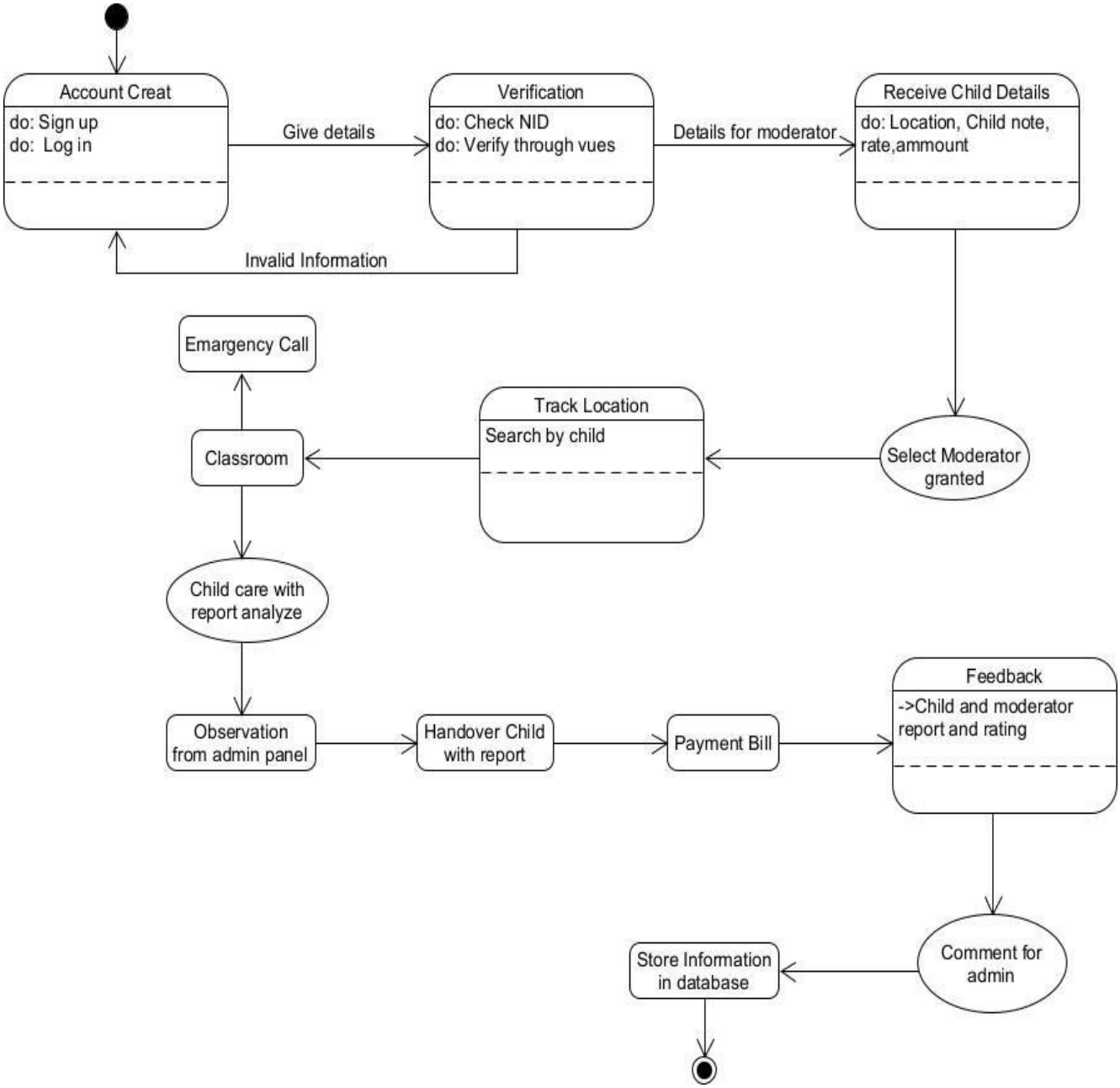
3.1 Class Diagram Scenario


Modaretor
-FirstName
-lastName
-password
-Classification
-NextEmployee
1
1..*
login
1..*
1
Parent
-FirstName
-lastName
-Address
-HomeNo
-Email
-WorkPlace
-AutoPickup
-NidNo
-addParent()
-removeParent()
1..*
1
Admin
-Parent
-Employee
-Child
-locationTrack
1
0..*
Reminder
-date
-massage
-Next
1
0..*
Complain box
-Review
0..*
1
1
1..*
Classroom
-Name
-Room
-Phone
-Teacher
+addchild()
+removechild()
1
1
1
0..*
Payment
-amount
-date
-paid
+credit()
+debit()
+addbill()
1
0..1
1..*
Waiting list
-NextChild
Child
-Name
-BirthDate
-Gender
-Classroom
-Photo
-Status
1
1..*
Registration
-RegDate
+enroll()
+withdraw()

3.1 Activity Diagram Scenario



Sate Diagram Scenario



6.0 Stakeholders analysis.

To develop this project some following project stakeholders are necessary as a manager's perspective. They are here to support developing the project but not a part of the software. The term "stakeholder' refers to the people or groups affected by a software development project. Stakeholders exist both within the organization and outside of maybe end users, or they might simply be affected by the process. Either way they have a vested interest in the final product.

Internal Stakeholders: Internal stakeholders are those who work for our organization inside. In our project, we consider top management which includes the President of the Company (Owner), and directors. Then we consider a project team that consists of a project manager (PM), program manager, designing team, developer team, testing team, maintenance team, security & resource manager, and marketing team. Each team has a certain task to perform in order to complete our project. Following the successful launch of the alpha version, we take into account a few internal customers who also take into consideration these internal stakeholders.

External Stakeholders: External customers are the customers when projects could be marketed to outside customers. Our project is prepared to be introduced to external stakeholders on the market after passing alpha testing. We consider external stakeholders' sellers, buyers, and brokers in our main system. There was many more external stakeholders Govt. rules & regulations monitory team, contractors, or sub-contractors (we hire to supply many things- foods, waters, computer operators, electrician, security guard, etc.), lawsuits, and suppliers. There are frequently multiple significant stakeholders in the project. The number of stakeholders affects the project's complexity level and increases project stress. The stakeholder complexity of the project will also be influenced by the stakeholder's financial or emotional commitment to it as well as their capacity to shape its outcomes or method of execution. The degree of agreement or disagreement among project stakeholders has an impact on the project's complexity in addition to the number of stakeholders and their amount of investment. Student, parent, children, Managers and company liaisons, Project managers, Developers, Partners, Customer service department.

7.0 Feasibility study:

Technical feasibility: From a business point of view this is project is technically feasible. "Online Auction system" is a desktop-based application. It is suitable for different user groups to be connected.

Required Hardware: CPU, Mouse, Monitor, Keyboard, system memory (RAM), scanner, Speaker, printer, UPS.

Required software: web browsers, designing applications,

MySQL, PHP, XAMP, Visual Studio.

All of these tools and technology are available to everyone at no cost. It is a web-based application which is easily accessible for the user. It provides technical guaranty of accuracy, reliability and security.

Financial feasibility:

Employee	No of employee	Salary (per person)	Total Salary
Project manager	1	45000	495000 (11 months)
Designer	1	30000	180000 (6 months)
Programmer	3	25000	825000 (11 months)
Tester	1	30000	150000 (5 months)
Security engineer	1	25000	275000 (11 months)

Total: 1925000 Taka

Role	Cost
Developers & Project Manager	1925000
Other Employees	264000
Others Cost	719800

Total: 2908800 Taka

Total Cost will be 2908800. “Online auction system” is financially feasible. Since it is developed using the existing resources.

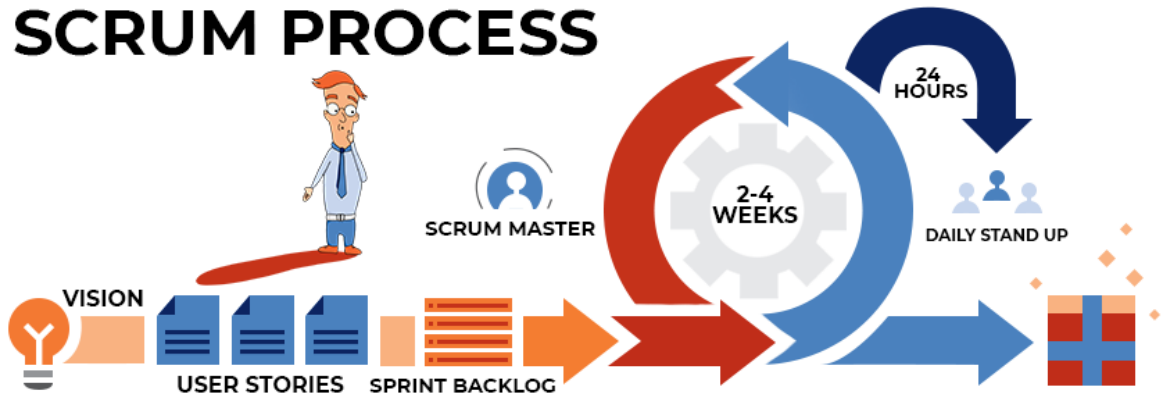
8.0 Systems component:

- Operating System
- Online Auction System is deployed on a Microsoft Windows platform, Mac OS X platform, and/or Citrix Presentation Server platform.
    - Hardware Requirements
    - Software Requirements
    - Required Web Browser Settings
    - Third-Party IM&P Server Requirements
    - Network Requirement

9.0 Process Model to be followed:

Process Model

We are going to develop an application ‘Online Child Care and Pre-schooling (Cloud Care)’ where overall all the requirements are there. We are going to use Scrum because Scrum is an Agile methodology consisting of lightweight management practices that have relatively little overhead. Its practices are simple to understand but very difficult to master in their entirety. Scrum uses an approach that is both iterative and incremental.
We cannot work with waterfall or any extension because of our project is fully dynamic and waterfall model is not good for dynamic. We cannot check our feature problems and test the output of it throughout the development process in waterfall model. There might be possibility in future to add new features in our application. So, *Scrum* can help teams complete project deliverables quickly and efficiently. *Scrum* ensures effective use of time and money. Large projects are divided into easily manageable sprints.



Scrum is based on three pillars: Transparency, Inspection, and Adaptation. With transparency, everyone can see every part of the project, from inside the team and outside the team. Scrum encourages frequent inspection of work products and progress to detect undesirable deviations from expectations.
Within each phase, **Scrum** approach is best-suited for a relatively uncertain environment. And relies on several different activities and techniques based on these principles-

- Creativity and Innovation. ...
- Time-to-Market. ...
- Lower Costs. ...
- Improved Quality. ...
- Customer Satisfaction. ...
- Employee Satisfaction. ...
- Organizational Synergy.

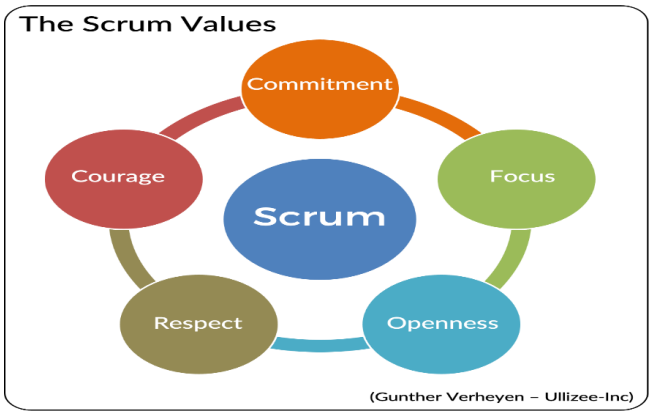


FIGURE: SCRUM VALUES

Project Roles Identification and Responsibilities

Depending on various activities there are many roles in our project. Every role has different types of job to do. Based on their activity the roles are given below with responsibilities-

SCRUM process includes three phases

- Pre-game:
- Development (game phase):
- Post-game:

Scrum defines three roles: ScrumMaster, Product Owner, and Development Team. Together all three roles make up a Scrum Team.

PRODUCT OWNR FUNCTIONS:

- Customer Voice: Represents the customers wants and needs.
- Communicator: Knows how to tailor a message to a wide variety of stakeholders
- Decider. Sifts through competing priorities to choose the right product features and says no to the rest.

SCRUM MASTER FUNCTIONS:

- Coach: Facilitates meetings, conversations, and improvements.
- Protector: Runs interference so the team can remain focused.
- Servant Leader. Leads without authority and puts the team first.
- Agile Advocate: Reinforces agile principles throughout the organization.

Development Team Characteristics

Development teams have the following characteristics:

- They are self-organizing. No one (not even the ScrumMaster) tells the development team how to turn Product Backlog into Increments of potentially releasable functionality;
- Development teams are cross-functional, with all the skills as a team necessary to create a product Increment;
- Scrum recognizes no titles for development team members, regardless of the work being performed by the person;

- Scrum recognizes no sub-teams in the development team, regardless of domains that need to be addressed like testing, architecture, operations, or business analysis; and,
- Individual development team members may have specialized skills and areas of focus, but accountability belongs to the development team as a whole.

10.0 Efforts estimation:

Our primary goal in project management activity is to deliver the product on time, on budget, and with expected quality. The main challenges are Time, Cost, Scope, Resources, and Environment. We have to finish our work within the deadline, within budget, and put the proper functionality into the system, should keep and manage the proper resources to do the work smoothly, and lastly, we need a good environment to work. If we handle all the constraints properly then we will find a good output.

Time Estimation:

a. For creating prototype hours needed:80 hours. For Developing Hours needed: 860 hours.
b. For revision hours needed: 60 hours
c. For testing & debugging hours needed:200 hours Total working hour :1200 hours
d. Daily working hour: 8 hours
e. Total days need:1200/8=150 days or 5 months or 20 weeks.

Estimation:

1. A working solution should be ready by 20 weeks.
2. After installation, the program shouldn't use up more than 80mb of storage.
3. Although Visual Studio code is preferred among developers, they can also utilize other editors.
4. The standard version control system and code management tool will be Git.
5. The code will be stored on GitHub, where numerous developers will collaborate.
6. Selenium will be used to carry out unit testing.
7. Selenium will be used to carry out unit testing. With the use of a Figma, interactive prototyping will be carried out.
8. The project is expected to cost 190,000 BDT.

Resources:

3 app developers, 3 software testers, 5 Custom Built PCs, 6 Android mobile smartphones, 2 LAN Connection. It is advised that this project have at least one full inspector due to the structure and stages of project distribution. For the assessment, the person will need to be given some time at the beginning of the project, and then, roughly six months later, they will need to be provided full-time. The project/test manager will take over if a different tester is not available. To include a thorough and pertinent study, the following preparation-related topics should be considered. The personnel for this project have long been planned. The majority of the group will participate in particular research tasks, which are covered in greater depth in the section on responsibilities.

The developers and testers will need to be taught Java, C++, Dart, Flutter, and MySQL.
Automation tester should gain the proper knowledge and also have the experience to operate the tools.

Project Estimation

COCOMO (CONSTRUCTIVE COST MODEL)

As our project type is Organic,

So, Effort = PM= Coefficient<Effort Factor>*(SLOC/1000) ^P

= 2.4*(7000/1000) ^1.05

= 18.52 working hours.

Development time = DM = 2.50*(PM)^T

= 2.5*(18.52) ^ 0.38

= 7.58 weeks days

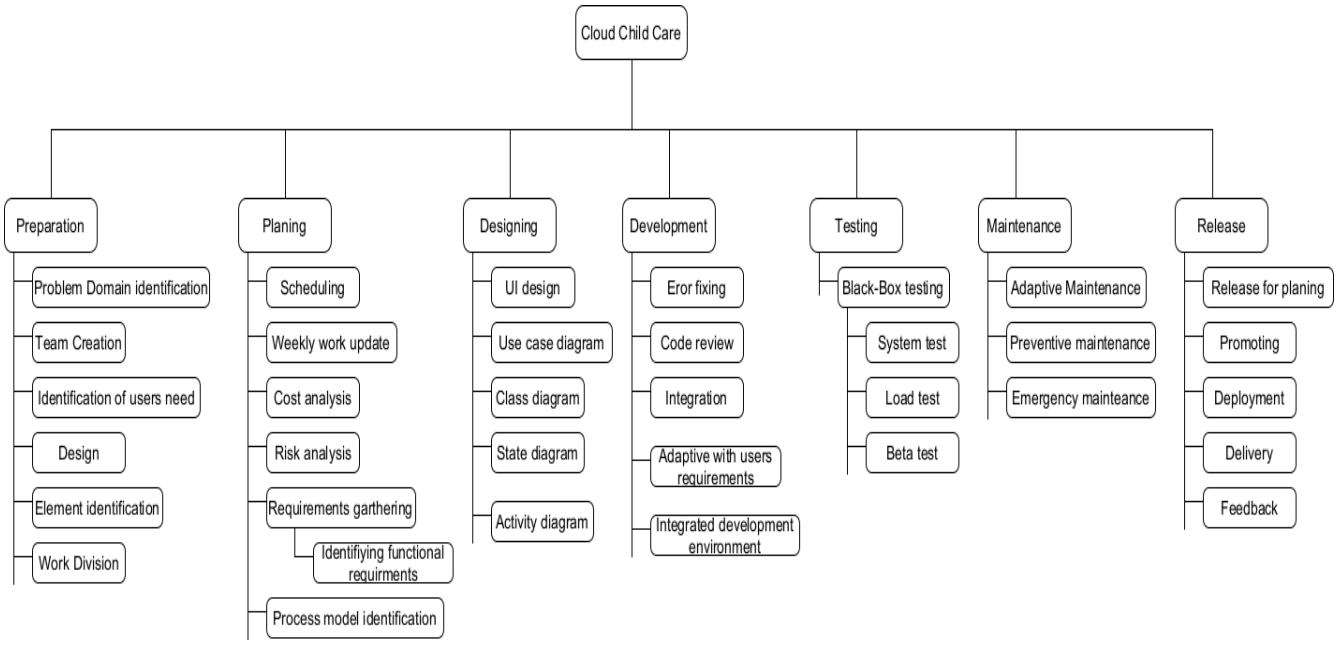
Required number of people = ST = PM/DM

= 18.52/ 7.58

= 2.44

= 3 persons

WBS (Work Break Down Structure)



11. Activity Network Diagram:

Here,

A = Feasibility Study

B = User Requirements

C = Analysis

D = System Designing

E = Program Design

F = Coding

G = Testing

H = Market Release

Activity	Duration weeks	precedents
A	4	
B	5	A
C	3	A

D	12	B
E	14	D
F	10	C
G	7	B
H	12	E, F, G

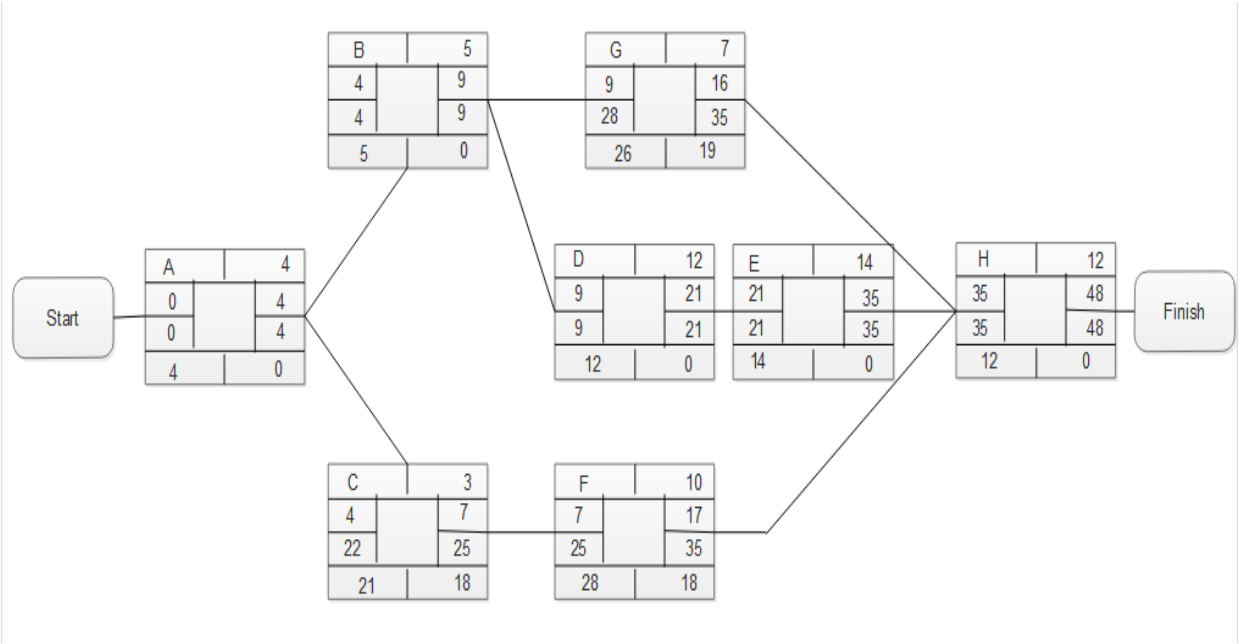


Figure 5: Activity diagram of our system

Critical path = A → B → D → E → H

Project completion time = 48 weeks

12.0 Risk Analysis:

Analyzing risks requires looking at how project goals and outcomes could change as a result of the risk event. Once the risks have been identified, they are examined to determine their qualitative and quantitative effects on the project in order to determine the best course of action for mitigating them. Risk analysis is crucial to getting good results from a project. It is within a project that it is used to manage the risk for exceptions. On the other hand, contingency plans are developed by governments and other commercial organizations. Every business has rules and regulations that they must follow in the event of a disaster. The plan may also include policies for disaster mitigation. Therefore, it is very important to follow these rules and do everything for the benefit of the organization. Therefore, errors in the project will make it difficult for staff, doctors and consumers to receive honest data. However, if they attempt to access the website within a reasonable time, they will be denied access due to the problem. Engineers may occasionally need to update and manage project protection. Its maintenance can be expensive for the company. To maintain the recommended optimization, it may be necessary to dedicate staff to manage all features and security precautions. Financial analysis is risky, but it's worth it financially. Therefore, getting this method to accommodate his busy schedule and administrative work will make any auction happy.

Technical, programmatic, and process risks are identified and categorized as part of software risk management, which then forms the basis of a plan that connects each to a mitigation approach. Throughout the project, the project manager keeps an eye on risk. If any do, a particular owner takes a mitigating step.

- **Lack of encrypted data:** Keep an eye on security and back up the data with highly encryption.
- **Attempt unauthorized access:** Consecutively three failed login attempts in an hour, the user will be restricted.
- **Error in Functionalities:** Regularly test the application and make a daily backup.
- **Wrong SQL Command for Sensitive Data:** Keep security scans and backups up to data.
- **Contingency Planning**

A contingency plan in project management is a defined, actionable plan that is to be enacted if an identified risk becomes a reality. It is essentially a “Plan B”, to be put in place when things go differently than expected.

- **Power outages:** We can face the load shedding that's why we need to always ready a backup power source.
- **Network Failure:** We will install two fiber optics connection from the different ISP as if one will be work as back up of another.

13.0 Budget for the project

Developers Salary in 11 Months: Per Developer Salary per Working Hour= 800 Taka
Here, we count Designer, Programmer, Tester and Security engineer as developer.
Total Developer Salary = 800 * 1912 = 1529600 Taka Salary for
Project manager for per month = 45000 Taka
Total Project manager salary for 11 months = 11 * 45000 = 495000 Taka
Other Employees = 3 person
Salary for other employees per months = 8000 Taka

Total salary for other employees = 8000 * 11 * 3 = 264000 Taka Requirements
Analysis:
Time needed: 1-month (22 working days = 176 working hour) Req
Analysis Person's Hourly wage=300 Taka
Total Req Analysis Expense = 300 * 176 = 52800 Taka

Transportation Cost Estimation: 50,000 Taka

Training & Hardware Expenses Estimation: 300,000 Taka

Rent Expenses:

Room per Month=19,000 Taka Total in
11 Months= 209000 Taka
Total Utilities in 11 Months: 45,000 Taka

Maintenance (Till 6 months after Delivery):

Expense Per Hour: 900 Taka

Total Estimated Time Needed for Maintenance= 70 hours

Total Estimated Maintenance Expense= 70 * 900 = 63,000 Taka
Total Estimated Expense: 1529600 + 495000 + 52800 + 50,000 + 300,000 + 209000 + 45,000 +

63,000 + 264000 = 2955600 Taka
Profit:

20% of Total Estimated Expense= 2955600 * 20% = 591120 Taka

14.0 Conclusion:

Childcare challenges have become a barrier to work, especially for mothers, who disproportionately take on unpaid caregiving responsibilities when their families cannot find or afford childcare. In Bangladesh, most parents have limited knowledge of child care and rearing. This project can help many people and change the lives. And our future generation will safe with the concern. so, our software will help you to take care of your baby with an educated moderator.

THANK YOU