American International University-Bangladesh (AIUB)

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

SDPM Group Project, Spring 2023

Project Title

A system designed to manage job placement activities

Section: B

Submitted by

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1.0 Introduction:

A project called Job Placement Management seeks to provide a platform for connecting job searchers and recruiters in order to suit their needs and lower unemployment rates. Around us, there are several employment openings for full-time, part-time, remote, etc. positions. However, the job postings are not well arranged, and occasionally there is a lack of information. A few sources for job recruiting ads are also questionable. In order to address this issue, we are building our project.

Our goal is to construct a web-based Job Placement application intended for developers, testers, project managers, and customers. The end-users will be job seekers, recruiters, and administrators. Job seekers and recruiters will create accounts to browse and post job ads, respectively. The administrator will verify the information of both users. Recruiters will create job ads for specific positions within their companies, and the admin will approve them for job seekers to view. Job seekers will have the ability to filter and search for job ads according to their preferences, view details of the job ads, and apply for suitable positions. Recruiters will be able to review applications submitted in response to their job ads. The project's objective is to provide a secure and dependable job placement platform that will assist job seekers in finding suitable employment and will aid in addressing society's unemployment problem by connecting job seekers and recruiters in one platform. Additionally, the administrator will monitor the system for fake job ads and job seekers' false information.

2.0 Project Title:

A system designed to manage job placement activities

3.0 Objectives:

The overall goal of this software system is to create a reliable job placement platform where all employers in our nation can easily find the right candidates by posting their requirements and job descriptions, and job seekers can browse a variety of openings and find their ideal position without being taken advantage of or experiencing false or fraudulent behavior from either end.

The specific goals of this software system are:

- Create software that is easy to use for recruiters and job seekers.

- Develop a secure system for job placement that prevents false or misleading information or individuals from being included.
- Build a platform that enables recruiters to find the best candidates with minimal effort.
- Create a platform for job seekers that enables them to find the most suitable job opportunities with minimal hassle.

4.0 Justification:

This system's goal is to save recruiters and job searchers time and hassle by bringing them together on a single, well-organized platform. Both parties will profit from this system, job seekers and recruiters alike.

The benefit of this method is that there are no opportunities for fraudulent companies or job postings because it is secure. Additionally, both users may easily find one another without having to search randomly. When employers need workers or employees to complete the assignment, job recruiters might post their ads. Additionally, job seekers will find their ideal positions extremely quickly and effortlessly. Job searchers can apply for their preferred positions from anywhere in the nation.

5.0 System Overview:

The "Job Placement Management System" is a web application designed to facilitate job placement and recruitment management for both recruiters and job seekers while ensuring the authenticity of users and information to prevent fraud. The main audience for this system includes job seekers, recruiters, and administrators.

To use this system, recruiters and job seekers must first register by providing their name, NID, phone number, email address, and password. After registering, the admin will verify their provided information and approve their profile. Once verified, both users can log in to the system with their email and password.

Recruiters can post job circulars to the system with all the relevant details, and the admin will review and approve the post. After approval, the job circular post will be available to all job seekers who can search for their preferred jobs using filters. To apply for any job, job seekers must upload their CVs, which will also be checked and approved by the admin. Once their CV is approved, job seekers can apply for their preferred job.

Recruiters can view the job applications and if they find a suitable candidate, they can send a hiring confirmation to the job seeker. The admin has the authority to ban any user who provides incorrect, false, or fraudulent information to the system. This system provides a reliable and organized platform for recruiters and job seekers to connect, making the job search process more efficient and effective.

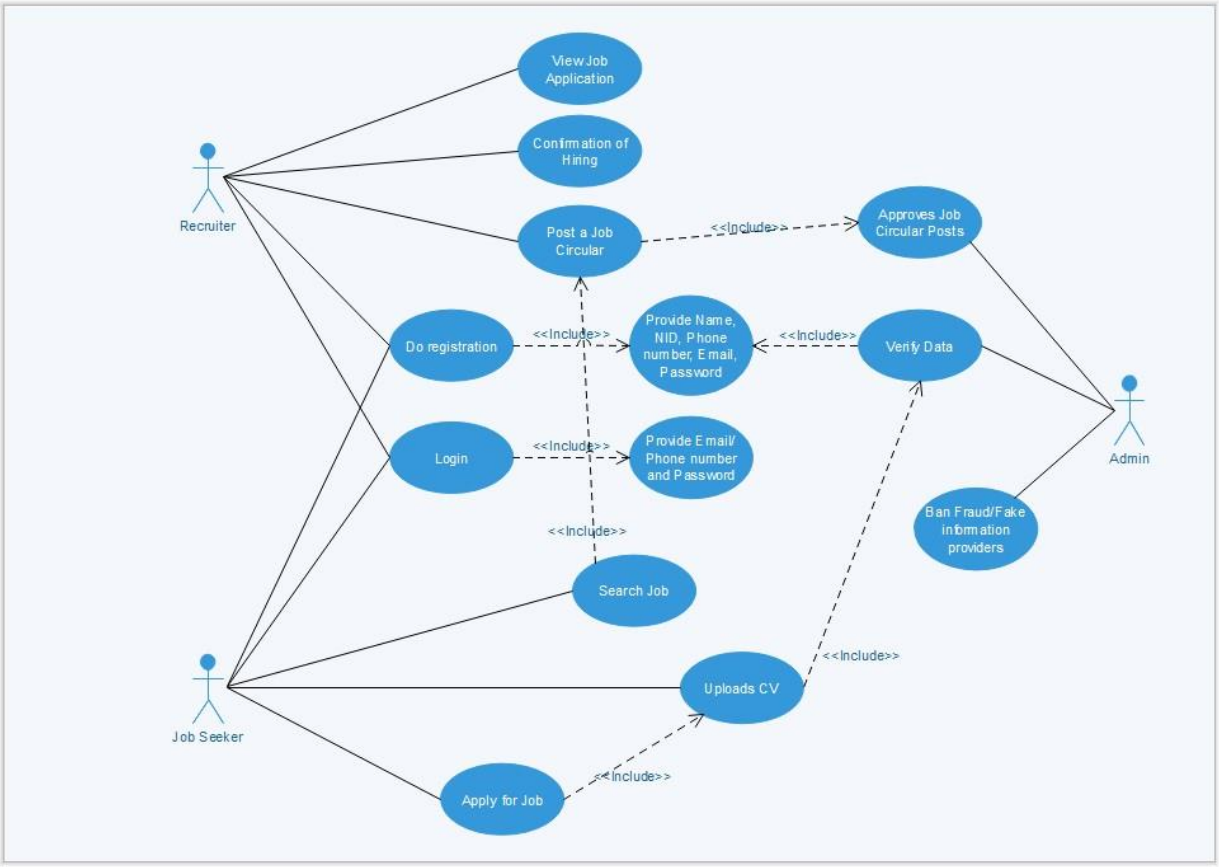


Fig: Use Case Diagram of Job Placement Management System

6.0 Stakeholders Analysis:

Stakeholders are the people who have stakes or who are connected with this project such as the Developers, Testers, sponsors, the consumers, etc.

We have classified the stakeholders of this project into-

1. ***Primary Stakeholders***
    - Customer

- Project Manager
- Developers
- QA Engineer
- UI & UX Designer
- Database Engineer

2. ***Secondary Stakeholders***

- Job Seekers (End-user)
- Recruiter (End-user)
- Admin
- Government
- Consultant
- Business Analyst
- Marketing Personnel
- HR Personnel

3. ***Internal to the Project Team:***

- Project Manager
- Developers
- QA Engineer
- UI & UX Designer
- Database Engineer

4. ***External to the Project Team but in the Same Organization:***

- Business Analyst
- Marketing Personnel
- HR Personnel
- Admin
- Consultant

5. ***External to both Project Team and the Organization:***

- Job Seekers (End-user)
- Recruiters (End-user)
- Government
- Customer

6. ***Positive Stakeholders:***

    - All of them who are identified as stakeholders from point 1 to 5.

7. ***Negative Stakeholder:***

    - Fraud Job Recruiters.
    - Fraud Job seekers.

7.0 Feasibility Study:

To ensure the feasibility of the project, a technical assessment needs to be conducted to determine if the project can be physically and technically built. The usability of the product must also be evaluated to ensure that customers can easily use the service. Additionally, the necessity of the services or product must be determined to ensure that there is a demand for it.

The project at hand is a job placement management system with additional services that aims to bring job recruiters, job seekers, and other users together in one platform to reduce the hassle of finding or hiring someone for a job. The platform is easily accessible through any smart device with internet connectivity, making it highly reachable to its target audience of companies, recruiters, and job seekers. This platform is more organized than other online job platforms, saving users both time and effort. Customer support operators will also be available for staffing purposes.

In terms of financial feasibility, this project has a good opportunity to capture the market as there are only a few similar services available and they are not organized enough. As there is a moderate level of competition and high demand for this kind of service, regular profits are estimated to be generated on a yearly basis. Therefore, this project is financially feasible.

Project Cash Flow Projection - figures are end of year totals (BDT)	
Year	Project cash flow
0	**-9,22,200**
1	1,80,000
2	2,00,000
3	2,80,000
4	3,20,000

5	4,00,000
Net Profit	2,77,800

- ***Payback Period:*** 4 years is the time taken to break even or pay back the initial investment.
- ***Return on Investment (ROI):***

  Average Annual Profit = Annual Profit/Number of Years = 2,77,800/5 = Tk. 55,560

  ROI = (Average Annual Profit/Total Investment) * 100

  = (55,560/9,22,200) * 100

  = **6.02%**

8.0 System Components:

Here in this project, there are basically 3 types of modules these are Recruiters, Job seekers, and Admin. There are various types of functionalities for each module to complete and connect this project. The system components are:

1. ***Recruiter***
   - Registration
   - Login
   - Post Job Circular
   - View Job Applications
   - Hiring Confirmation

2. ***Job Seeker***
   - Registration
   - Login
   - Search Jobs using Filters
   - Upload CV
   - Apply for the Job

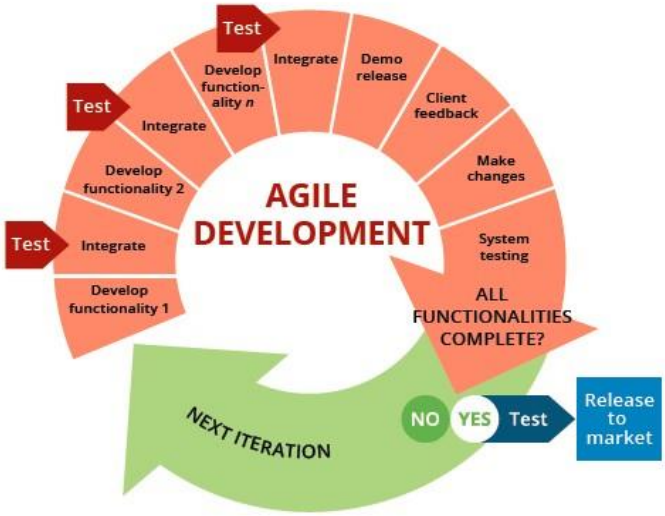
3. ***Admin***

- Verify Recruiters Information
- Verify Job Seekers' Information
- Approve Profiles for completing Registration
- Approve Job Circular Posts
- Approve CV of Job Seeker
- Ban Fraud Recruiters
- Ban Fraud Job Seekers

9.0 Process Model to be Followed:

In order to develop successful software and achieve the desired outcome, it is crucial for an organization to choose the appropriate process model. For our "Job Placement Management System" software, we have decided to utilize the Agile Process Model, specifically the Dynamic Software Development Method (DSDM).

The Agile Process Model combines iterative and incremental processes with a focus on adaptability and customer satisfaction by delivering functional software products quickly. This method breaks the project down into small, incremental builds that are delivered in iterations. Since our project is a medium-sized endeavor, the Agile Model is well-suited for it. Additionally, due to the large number of users who will be utilizing the system, it is possible that additional requirements may be requested, making adaptability a key factor in choosing the Agile Process Model. The ability to communicate face-to-face with our clients also played a role in our decision to use Agile. Furthermore, since our project is addressing a social issue, it is essential to complete



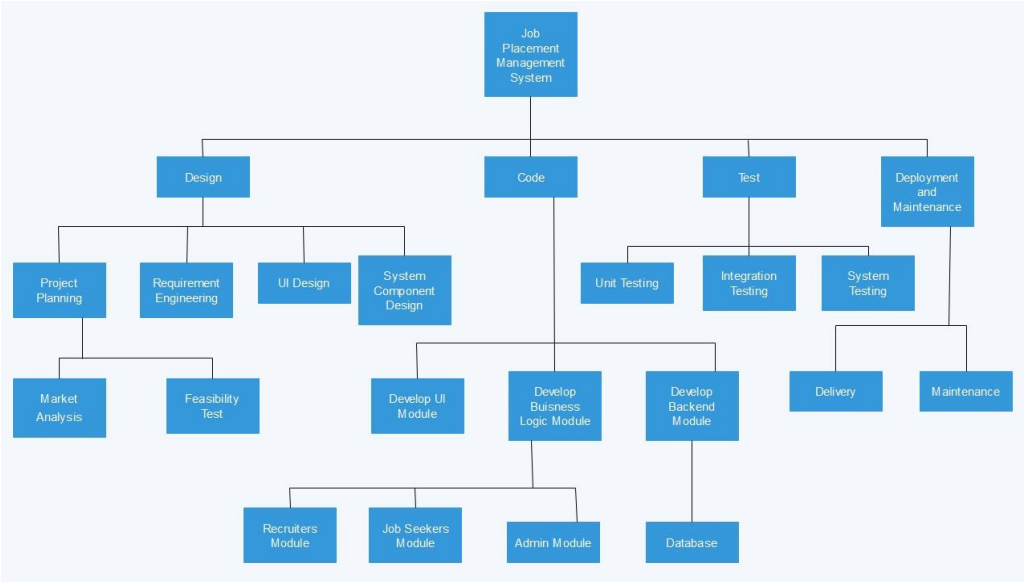
it as soon as possible. The Agile Process Model prioritizes speed of delivery over documentation, making it an ideal choice for our project.

The primary justification for choosing the Dynamic Software Development Method (DSDM) is its rapid application development strategy for software development, which provides an agile project distribution structure. This aligns with the key DSDM functionality because our users are constantly connected. The eight DSDM guiding principles are a wonderful fit for our project. For instance, we must concentrate on business needs, deliver on schedule, never compromise on quality, use iterative development, and communicate openly and frequently.

So, for all these unavoidable and necessary reasons, we choose Agile Process Model specifically, Dynamic Software Development Method.

10.0 Efforts Estimation:

The work breakdown structure for the project is given below-



Based on system components, estimated SLOC are described below –

Task	SLOC
UI Design	1000
Database Connection	600
Registration & Login system, session/cookie	2000
Recruiters Module	3000
Job Seekers Module	3000
Admin Module	1500
API Integration	400
Database Operations	800
Security Operations	3000
Data Access Authorization	2200
Total	**17,500**

Cost Constructive Model:

Considering the software project type as Semi-detached.

So, here Project Complexity, P = 1.12, SLOC-dependent coefficient, T = 0.35 and Coefficient<Effort Factor> = 3.0

SLOC= **25,000**

Effort = Person Months for the project (PM) = Coefficient<Effort Factor>*(SLOC/100) ^P
= 3.0 * (17500/1000) ^1.12 = 74.01 ≈ **75**

Development Time = DM = 2.50*(PM)^T = 2.50 * (74.01) ^0.35
= 11.28 months ≈ **12 months** = 48 weeks = (5*8*48) hours = **1920 hours**

Required Number of People = ST = Effort (PM) / Development Time (DM)
= 74.01 / 11.28 = 6.56 = **7 people needed**

Works assigned to the required developers		
Module	Name	Weeks
UI Development	Developer 1	4 weeks
Job Seekers Module	Developer 2, Developer 6	6 weeks
Recruiters Modules	Developer 3, Developer 7	6 weeks
Admin Module	Developer 4	6 weeks
Integrate Module	Developer 5	7 weeks

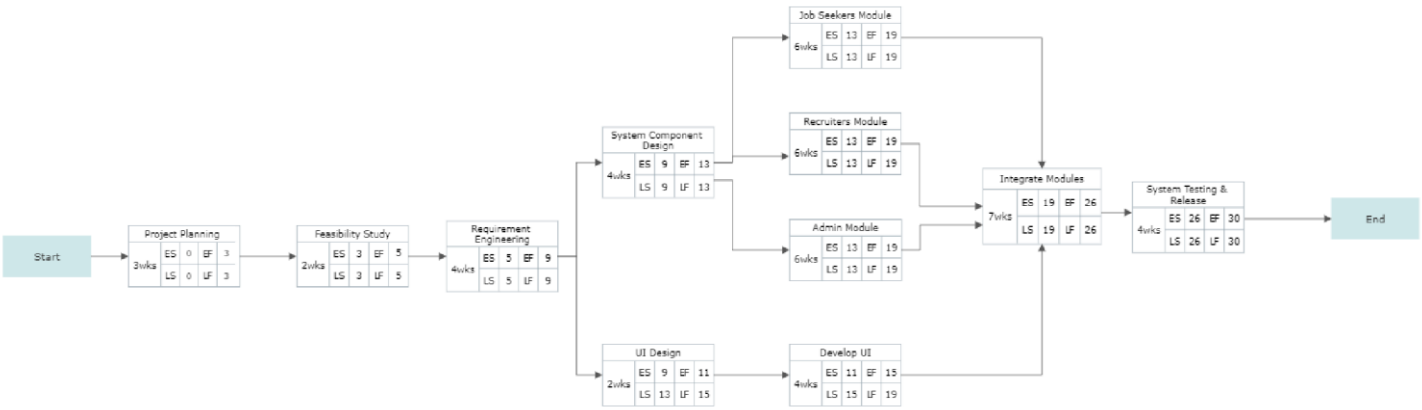
11.0 Activity Network Diagram:

Activity Name	Activity Node	Duration (Weeks)	Precedence
Project Planning	A	3	-
Feasibility Study	B	2	A
Requirement Engineering	C	4	B
System Component Design	D	4	C
UI Design	E	2	C
Job Seekers Module	F	6	D
Recruiters Module	G	6	D

Admin Module	H	6	D
Develop UI	I	4	E
Integrate Modules	J	7	F, G, H
System Testing & Release	K	4	J

12.0 Risk Analysis

Risk Id	Description	Risk Type/ Category	Probability of the Risk	Cost	Mitigation Policy	Risk Exposure
Risk01	During the project, 20% of developers may leave the project.	Staff Size and Experience (ST)	30%	Tk 30,000	Make a waiting list for the developers.	30%*30,000 = 9000
Risk02	The project may be larger than estimated.	Product Size (PS)	20%	Tk 25,000	Keep customers informed about project enlargement.	20%*25,000 = 5000
Risk03	The project schedule may can slip.	Development Environment (DE)	20%	Tk 20,000	Keep ready to take more employees.	20%*20,000 = 4000
Risk04	The choice of Technology may not fit for project.	Technology to be built (TE)	40%	Tk 45,000	Make sure to have backup technology plan.	40%*45,000 = 18000
Risk05	Funding can be finished	Customer characteristics (CU)	40%	Tk 45,000	Communicate with customer in a timely manner.	40%*45,000 = 18000



Risk06	Developers may be inexperienced	Staff Size and Experience (ST)	30%	Tk 30,000	Make sure to take senior developers with proper experience.	30%*30,000 = 9000

13.0 Budget for the Project:

Developer Salary:

Per hour working salary = Tk 125
Developer 1 salary = (125 * 8 hours * 5 days * 4 weeks) = Tk 20,000
Developer 2 salary = (125 * 8 hours * 5 days * 6 weeks) = Tk 30,000
Developer 3 salary = (125 * 8 hours * 5 days * 6 weeks) = Tk 30,000
Developer 4 salary = (125 * 8 hours * 5 days * 6 weeks) = Tk 30,000
Developer 5 salary = (125 * 8 hours * 5 days * 7 weeks) = Tk 35,000
Developer 6 salary = (125 * 8 hours * 5 days * 6 weeks) = Tk 30,000
Developer 7 salary = (125 * 8 hours * 5 days * 6 weeks) = Tk 30,000

Total developer salary = **Tk 2,05,000**

Project Manager Salary:

Per hour salary for PM = Tk 180
Estimated Time = 12 months = 1920 hours
Total PM salary = Tk (1920*180) = **Tk 3,45,600**

Requirement Analyst Salary:

Required Requirement Analyst= 1
Estimated time: 4 weeks
Per hour salary for analyst = Tk 100
Total Requirement Analyst Salary = Tk (5 days * 8 hours * 4 weeks *100) = **Tk 16,000**

Software Tester Salary:

Required Software Tester=3
Estimated time: 4 weeks
Per hour salary for Tester = Tk 120
Total Tester salary = Tk (4 weeks * 5 days * 8 hours * 120 * 2) = **Tk 57,600**

Maintenance (Till 6 Months after Delivery):

Expense per Hour: 300 Taka
Total Estimated Time needed for Maintenance = 60 Hours
Total Estimated Maintenance Expense = 60*300 = **Tk. 18,000**

Other Expenses:

Training Expense Estimation (4 weeks) = **Tk 20,000**
Hardware Expense Estimation = **Tk 1,00,000**
Total Transportation Expense estimation (48 weeks) = **Tk 20,000**
Utilities Bill for 12 months = **Tk 1,20,000**

PROJECT BUDGET *Development Time = 12 months = 48 weeks= 1920 hours Required People = 7*		
Sl.	**Expenditure Sector**	**Amount (Tk.)**
1.	Developers Salary	2,05,000
2.	Project Managers Salary	3,45,600
3.	Requirement Analysist Salary	16,000
4.	Software Testers Salary	57,600
5.	Maintenance	18,000
6.	Training expense estimation	20,000
7.	Hardware Expense estimation	1,00,000
8.	Transportation Expense estimation	20,000
9.	Utilities Bill for 8 months	1,20,000
Total Project Budget		**9,22,200**

14.0 Conclusion:

A proposed project, the online job placement system, has the potential to drastically alter the labor market and the population it serves, including employers, recruiters, and job seekers. The concept is also both financially and practically viable. Because there is currently less rivalry in this market segment and no organized system is in place, it presents a fantastic opportunity and business model project. All the connections are anticipated to gain from approving this project.

This paper was produced based on the requirement engineering analysis and anticipated estimation of the project "Job Placement Management System." Future documents and project progress will be monitored based on this project planning document.