Automatic Bench Resource Mapping System

MIS 6308

System Analysis and Project Management

Table of Contents

EXECUTIVE SUMMARY

The bench concept is majorly seen in the IT industry. It refers to the state of employee or group of employees who are not working on billable projects for some short/long period but are still eligible for all employee benefits from their employers. These employees are not productive and incur cost to company. As there is no work for these employees, they just pass their time after coming to office which gradually makes them start feeling discontented. This leads to high attrition in companies with comparatively higher number of employees in free pool or on bench.

The existing system includes talent acquisition team which manually matches skills of employees to available projects and map them. This process is time consuming and usually people get mapped to projects where their skillset doesn't match. Big companies have a separate talent planning and acquisition department which does this task of connection employees within a company to managers requiring resources.

Our project aims at the need to bypass this talent acquisition team to automate the process of mapping employees to projects which align with the skills of the employee. The system also gives option to select from multiple projects based on employee's interest unlike the legacy system where employee is forcefully mapped to project against his/her wishes.

If the employee is unable to find any relevant opportunities, there is an option to upskill in latest technologies along with parallelly looking for projects and connecting to managers directly. Learning new skills makes a resource confident and thus adds value to the organization.

SYSTEM PROPOSAL AND PROBLEM STATEMENT

Project Sponsor: Rohan Sharma, Vice President of Financial Services Unit

Business Need: Currently, there is no automated system for mapping resources to the required projects and is done manually by talent acquisition team.

Scope: Our team wants to implement a system where employees on bench or free pool in a company can be automatically assigned to projects or upskilled in niche industry skills/vertical specifics.

This System will replace manual effort and automate the process of mapping resources to correct project as per requirements. Furthermore, if the employee skills are not aligned with available projects, resource will be upskilled with the latest in demand tools and technologies. This will not only optimize the company's costs but will also lead to employee satisfaction. Implementation of this process will bypass the need for a talent management team and mitigate the time needed for the entire manual resource mapping process.

Functionality:

- Employees can select project from portal based on relevant matches shown by AI system.
- Employees can select upskill technologies.
- Employees can upload resume and contact managers for available opportunities.

Opportunities and Limitations:

- Opportunities: Automatic project assignments, Upskilling employees, Cost Optimization/Reduction (Talent acquisition managers/resources not needed after system is implemented)

- Limitations: Upskilling current old employees can lead to reduction in hiring of fresh energetic talent.

Time:

Our team consists of following members:

Role	Number of resources	Number of days required by each resource	Hours each day	Total hours (Number*Man days*Hours each day)
Analyst	1	10	8	80
Developers	4	10	8	320
Testers	2	4	8	64
Project Manger	1	24	2	48
Total hours required				512

Note: Taking practical scenario into account, a manger handles multiple projects and cannot devote complete 8 hours of his day for one team for whole duration of the project. So, we have approximately assigned 2 hours per day for complete duration of the project. There can be a day where a manger gives our team 4 hours of his day and there can also be scenario where we meet him for 30 minutes stand up meeting in a day, so we are taking average value.

Cost: Total estimated cost of the project:

Infrastructure Cost = $4000 (Servers) + $1000 (Networking) + $3000 (Licenses, Software and Tools) + $1000 (Miscellaneous costs) = $9000

Total resource cost = (464*40) + (48*50) = 18,560 + 2400 = $20,960

Note: Considering average pay of $40 per hour for analyst, developers, and tester and $50 per hour for manager (as manger has more experience and higher in hierarchy)

Total cost = Total resource cost + Infrastructure Cost = $20,960 + $9000 = $29,960

Project “AS IS”:

Currently, there is no automated system for mapping resources to the required projects. It is done manually by talent planning team and is time consuming process. Moreover, this process sometimes maps wrong employees to projects here skillsets doesn’t match with work.

Project “TO BE”:

The System will replace manual efforts and automate the process of mapping resources to correct project requirements and will also upskill the resources with the latest and in demand technologies if required.

Project Business Value added:

Tangible:

- <u>Cost</u>: No requirement of talent acquisition employees, Employees in free pool will be utilized by upskilling them and thus will no longer enjoy free salary without doing anything as is the case when a resource is in free pool/bench.
- <u>Time Optimization</u>: Employees will utilize their time for skill development, Manual process of employee mapping takes multiple days which wastes time.

Intangible:

- Employee are upskilling so they will be happy learning new skills, Employee (as they are engaged and not idle) and Stakeholder satisfaction

Business Value added scenarios:

Value Added Scenarios			
Features	**AS IS**	**TO BE**	**True Value**
Open Pool Associate –Resumes	Manually Exchange Emails For Resume Time : 2days Cost:25$/hr = $200	Providing a portal for the Bench Associate to upload resumes Time: Less than 10 mins Cost: Less than 15$	Time:~ 2 days Cost: $185
Portal (Add/Select Available Projects)	Manually review of associate skills and maps to a Project Time: 20 Days Cost: 100$/hr =$16000	Localized access to both Associate & Manager to projects Time: 5 Days Costs: $100/hr = $4000	Time:~ 15 days Cost: $12000
Portal (Add/Select Available Projects)	Does not exist Manual Collection via Email exchange Time = 90 Days Cost: 100$/hr =$72000	Automated access to upskilling on niche skills Time: upto 1 day Costs: 100$/hr = 100	Time:~ 89 days Cost: $71900
Total	**Time:~ 112 Days** **Cost:~$88200**	**Time:~ 7 Days** **Cost:~$4115**	**Time Saved:~ 105 Days** **Cost:~$84085**

Special Issues/Constraints:

- Our system is not implementing AI Project Matching software. This is out of our scope and will be purchased from external vender.
- The system is built for internal company use and works for employees and projects within a company.

PROJECT PLAN

(Includes the project activities, allocation of activities to team members, and a planned timeline)

1. Project Activities

Phase	Activity	Deliverables
Planning	• Define the problem and scope of any existing systems. • Determine the objectives for new systems	• Business Requirement Documentation (BRD) • Software Requirement Specifications (SRS) • Technical Requirement Specifications
Analysis	• Define any prototype system requirements • Evaluate alternatives to existing prototypes • Perform research and analysis to determine the needs of end-users	
Design	• Outline the details for the overall application, alongside specific aspects, such as its: User interfaces, System interfaces, Network and network requirements and Databases	• Use case Diagram • Class Diagram • Component Diagram • Workflow diagram • Activity Diagram
Implementation	• After testing, the overall design for the software will come together. Different modules or designs will be integrated into the primary source code through	• Working software

	developer efforts, usually by leveraging training environments to detect further errors or defects. • The information system will be integrated into its environment and eventually installed. After passing this stage, the software is theoretically ready for market and may be provided to any end-users.	
Testing	• System testing • System Integration testing • Performance testing • Usability testing • Acceptance testing	• Test Summary Report • Test results • QA plan • Revised bugs list • User Acceptance test are submitted which serves as the input for the next phase of Deployment
Deployment	• Once the product is successfully tested, the software product can be released or deployed to the customers for their usage	• Deployed software
Maintenance	• Maintenance phase ensures whether the customer is satisfied with the product that has been delivered	• Updated version of the product • Code maintenance

2. **Project Tasks:**

Phase	Activity	Task	Assigned To
Planning	Project Initiation	Create System Request Create Feasibility Analysis	Rohan (Project sponsor)
	Project Management	Create Project Workplan	Liza (Manager)
Analysis	Analysis Strategy	Develop To-be System and analysing as-is system	Saloni,Vishal(Analysts)
	Requirement Gathering	Develop system concept Develop business models	Saloni,Vishal(Analysts) and Liza (Manager)
	System Proposal	Analyse models and create a system proposal	Saloni,Vishal(Analysts)
Design	Design Strategy	Design in-house/outsource/buy	Saloni,Vishal(Analysts) ,Liza (Manager) and Rohan (Project sponsor)
	Architecture and Interfaces	For Hardware/Software/Network/UI	Saloni,Vishal(Analysts) ,Liza (Manager) and Rohan (Project sponsor)
	Database and Files	Develop storage (persistence) specifications	Yeshwanth (Developer)
	Program Design	Code writing	Yeshwanth (Developer)
Implementation	System Construction	Build and test it	Yeshwanth, Liza (Developer and Tester)
	System Installation	Training plan and conversion strategy	Yeshwanth, Liza (Developer and Tester)

	System Support	System Maintenance, Improvement	Yeshwanth , Liza(Developer and Tester)

3. Planned Timeline:

Phase	Start Date	End Date
Planning	09/01/2021	09/08/2021
Analysis	09/09/2021	09/16/2021
Design	09/17/2021	10/08/2021
Implementation	10/09/2021	10/30/2021

Note: Timeline in real world projects overlaps different phases.

4. Assumptions

- The project will not change in scope
- The resources identified will be available upon request
- Approved funding will be available upon request.

5. Constraints

- The project must operate within the funding and resource allocations approved
- The project team must deliver the software with no requirement for additional hardware
- Staff must complete the project within normal working hours.

REQUIREMENTS DEFINITION

Non-Functional Requirements:

1. Operational requirements

1.1 The system will operate on any web browser including mobile

1.2 The system will run batch for AI Project Matching every midnight

1.3 The system will automatically back up each day at midnight

2. Performance requirements

2.1 The system must be available 24 hours daily (365 days per year)

2.2 Response time for interactions between the system and the user will be less than two seconds

2.3 The system will store and retrieve project, upskill information and other transactional information every two seconds

3. Security requirements

3.1 Access to Project information is limited to bench employees and Managers only

3.2 Access to Employee information is limited to project managers only

3.3 Website is internal to organization and cannot be accessed by outside people (Hosted on internal domain and not on public domain).

4. Cultural and political requirements

4.1 The system will comply with all regulatory requirements. Compliance with all regulation is imperative

4.2 Strict compliance with all aspects of organization policies will be maintained at all times

Functional Requirements:

1. See available projects and skills

    1.1 Employees can login into portal for checking projects

    1.2 Bench employees can check available projects matched by AI system based on skillset

    1.3 Employees can apply to projects

    1.4 Employees can upload resume

2. Checking available employees on bench

    2.1 Manager can login to portal and see bench employees along with their skills

    2.2 Manager can contact employees to discuss further

    2.3 Manager can also add new upskill technologies as required by projects

    2.4 Manager can schedule interview with bench resource

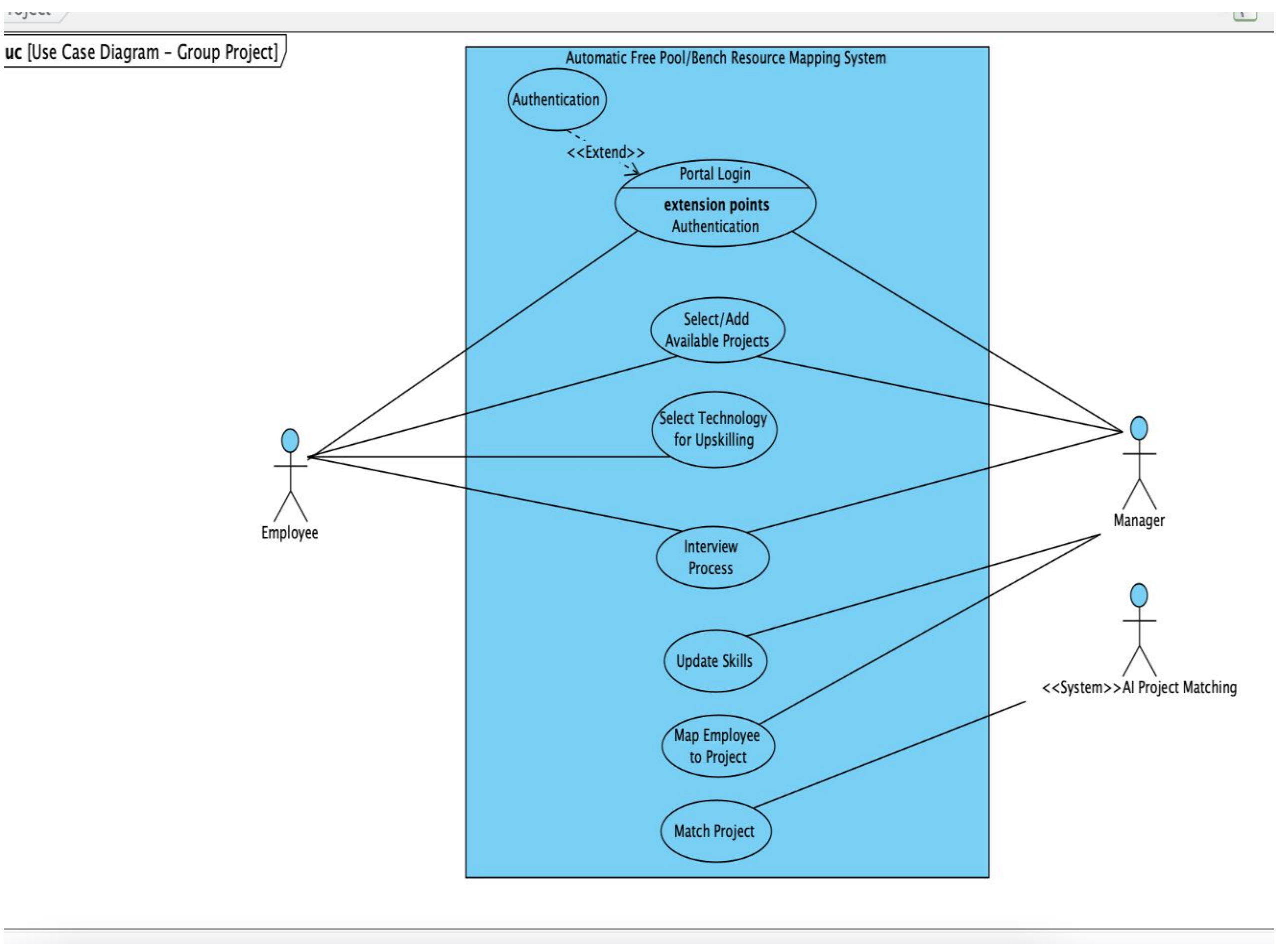
3. Check latest skills/technologies

    3.1 Enroll in upskill technology

    3.2 Choose mode of delivery: online or in person

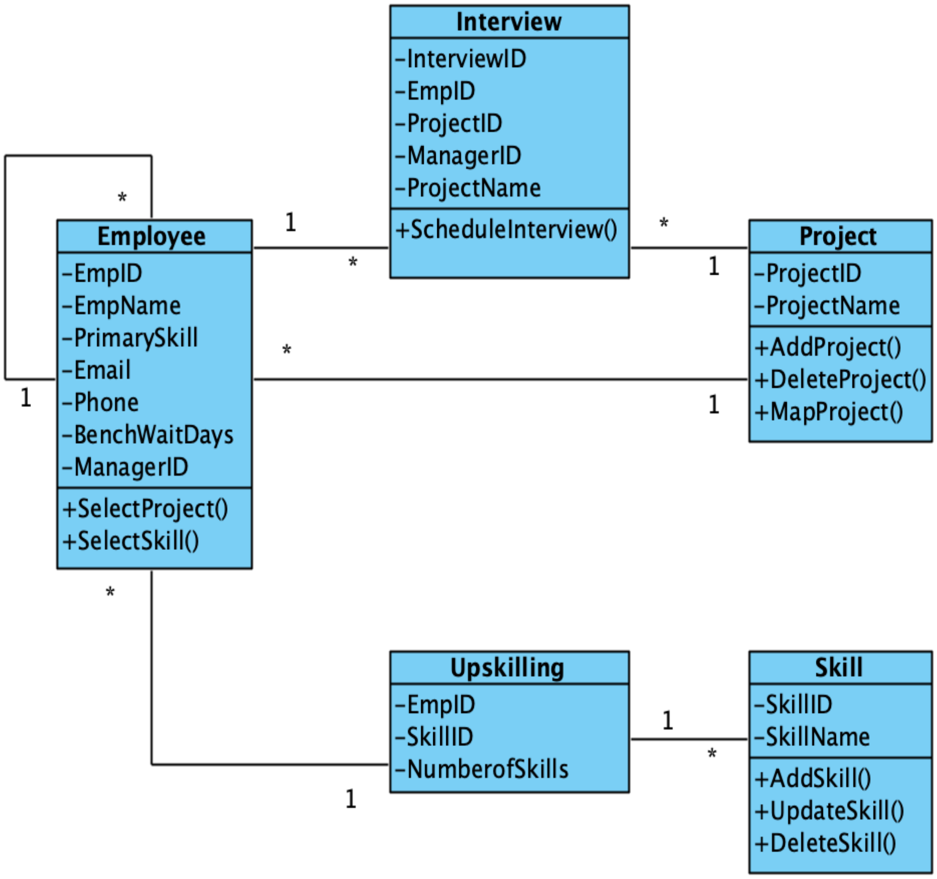
BEHAVIOURAL MODELS

1. Use Case Diagram:


uc [Use Case Diagram – Group Project]
Automatic Free Pool/Bench Resource Mapping System
Authentication
<<Extend>>
Portal Login
extension points
Authentication
Select/Add Available Projects
Select Technology for Upskilling
Interview Process
Update Skills
Map Employee to Project
Match Project
Employee
Manager
<<System>>AI Project Matching

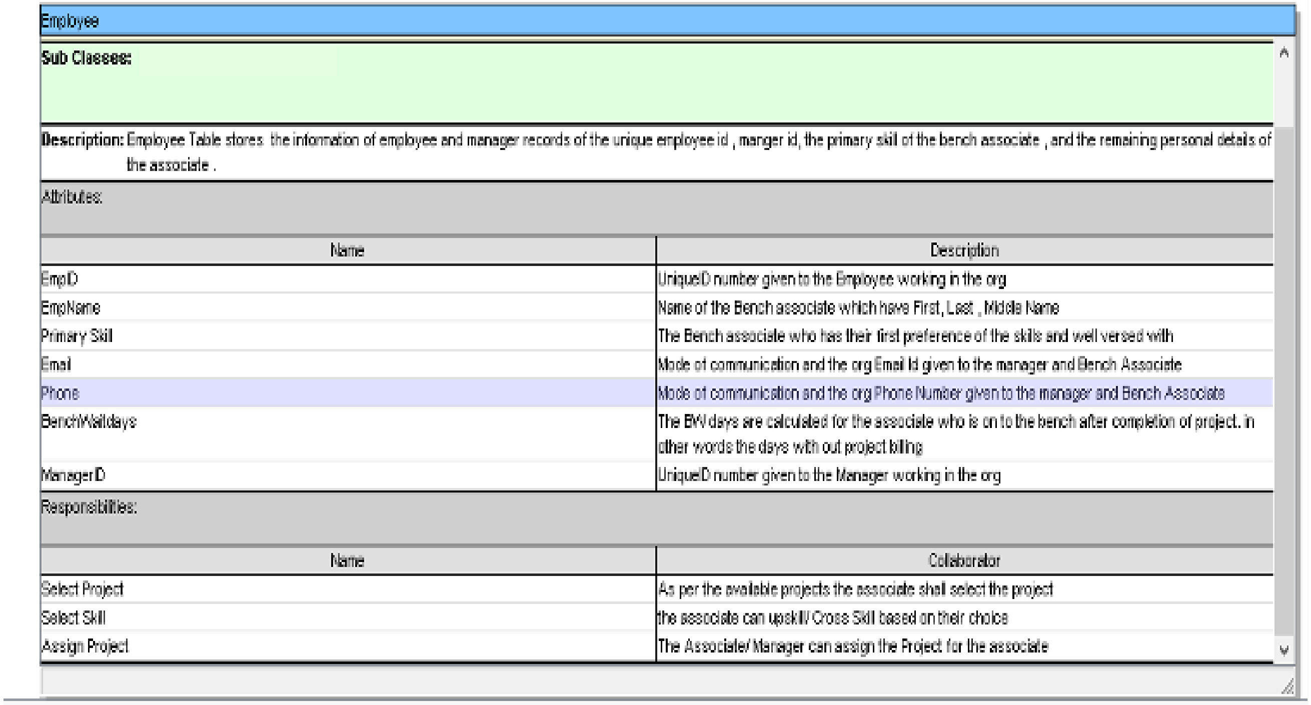
STRUCTURAL MODELS

1. **Class Diagram:**



2. CRC Cards:

Note – Visual Paradigm allows building only the below CRC Card format.



Employee

Sub Classes:

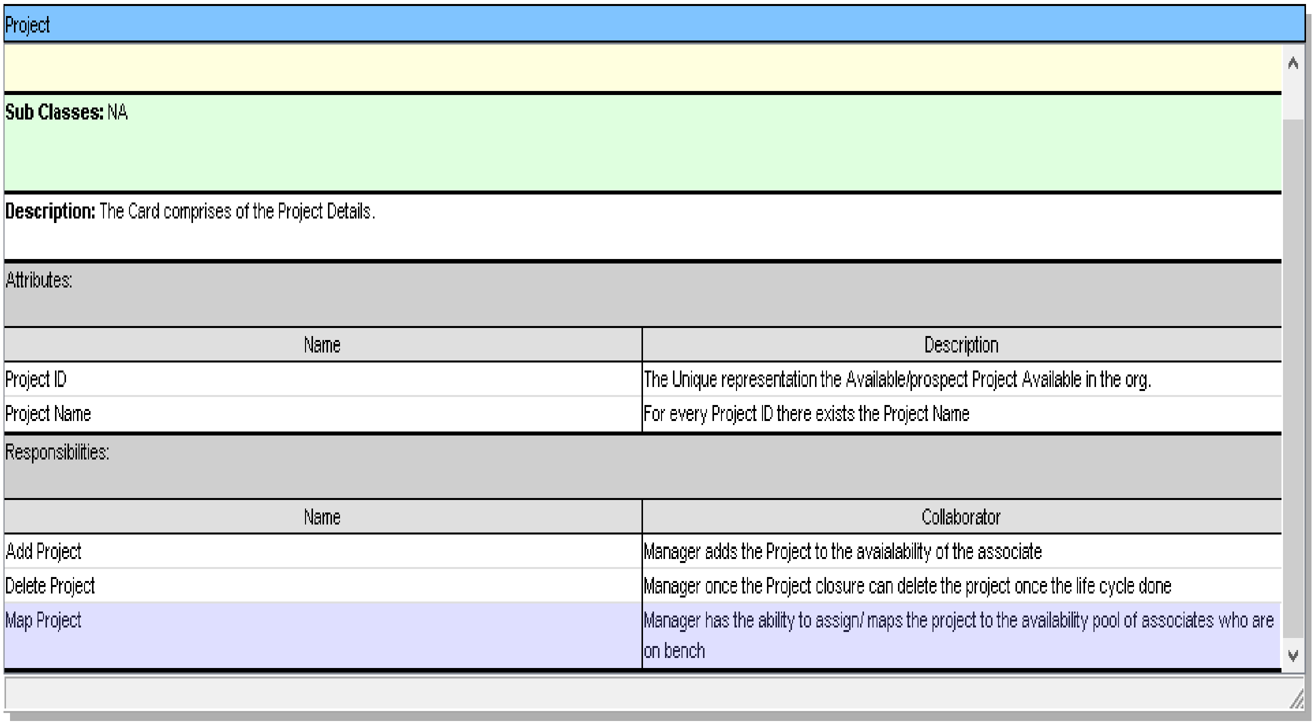
Description: Employee Table stores the information of employee and manager records of the unique employee id , manger id, the primary skil of the bench associate , and the remaining personal details of the associate .

Attributes:

Name	Description
EmpID	UniqueID number given to the Employee working in the org
EmpName	Name of the Bench associate which have First, Last , Middle Name
Primary Skill	The Bench associate who has their first preference of the skills and well versed with
Email	Mode of communication and the org Email Id given to the manager and Bench Associate
Phone	Mode of communication and the org Phone Number given to the manager and Bench Associate
BenchWaitdays	The BW days are calculated for the associate who is on to the bench after completion of project. in other words the days with out project billing
ManagerID	UniqueID number given to the Manager working in the org

Responsibilities:

Name	Collaborator
Select Project	As per the available projects the associate shall select the project
Select Skill	the associate can upskill/ Cross Skill based on their choice
Assign Project	The Associate/ Manager can assign the Project for the associate



Project

Sub Classes: NA

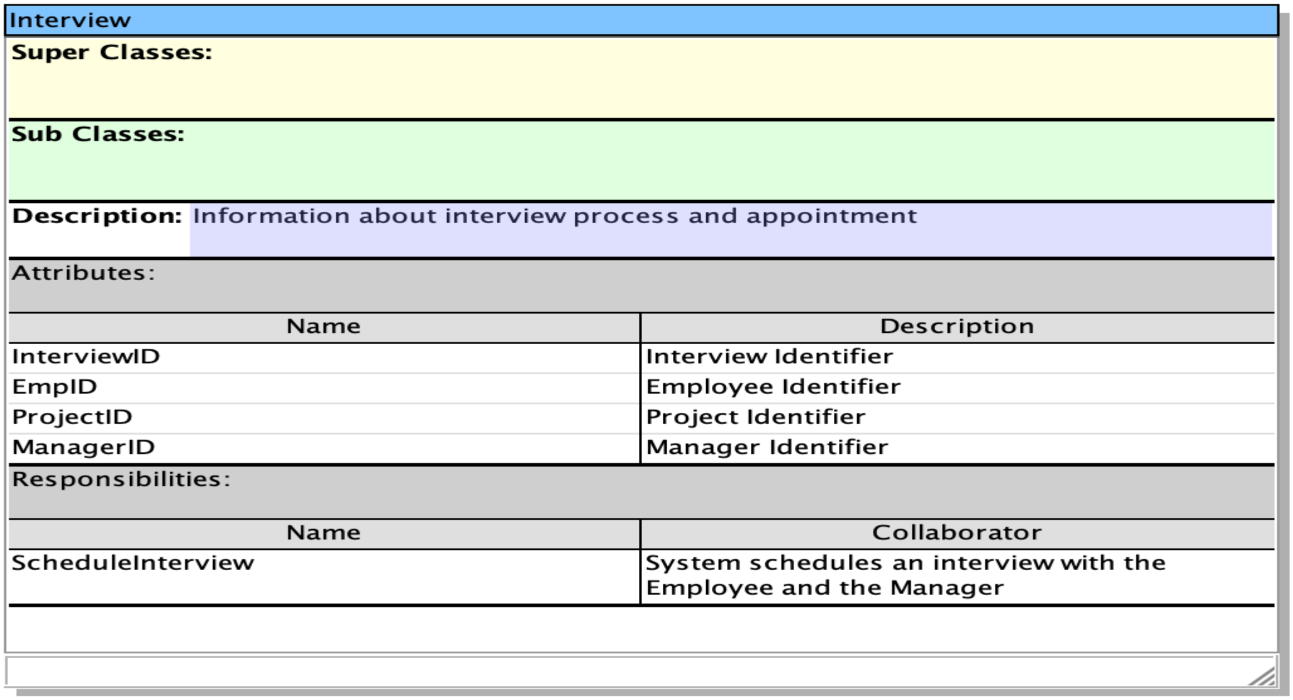
Description: The Card comprises of the Project Details.

Attributes:

Name	Description
Project ID	The Unique representation the Available/prospect Project Available in the org.
Project Name	For every Project ID there exists the Project Name

Responsibilities:

Name	Collaborator
Add Project	Manager adds the Project to the avaialability of the associate
Delete Project	Manager once the Project closure can delete the project once the life cycle done
Map Project	Manager has the ability to assign/ maps the project to the availability pool of associates who are on bench



Interview

Super Classes:

Sub Classes:

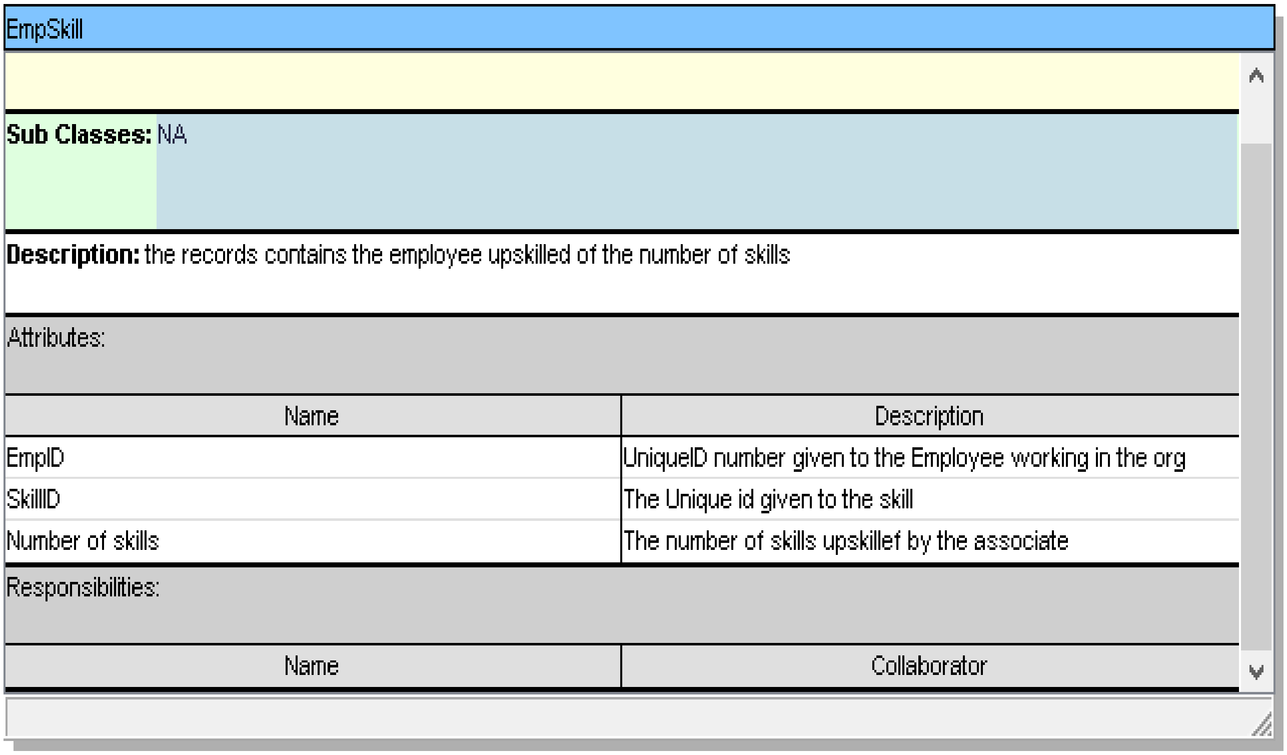
Description: Information about interview process and appointment

Attributes:

Name	Description
InterviewID	Interview Identifier
EmpID	Employee Identifier
ProjectID	Project Identifier
ManagerID	Manager Identifier

Responsibilities:

Name	Collaborator
ScheduleInterview	System schedules an interview with the Employee and the Manager



EmpSkill

Sub Classes: NA

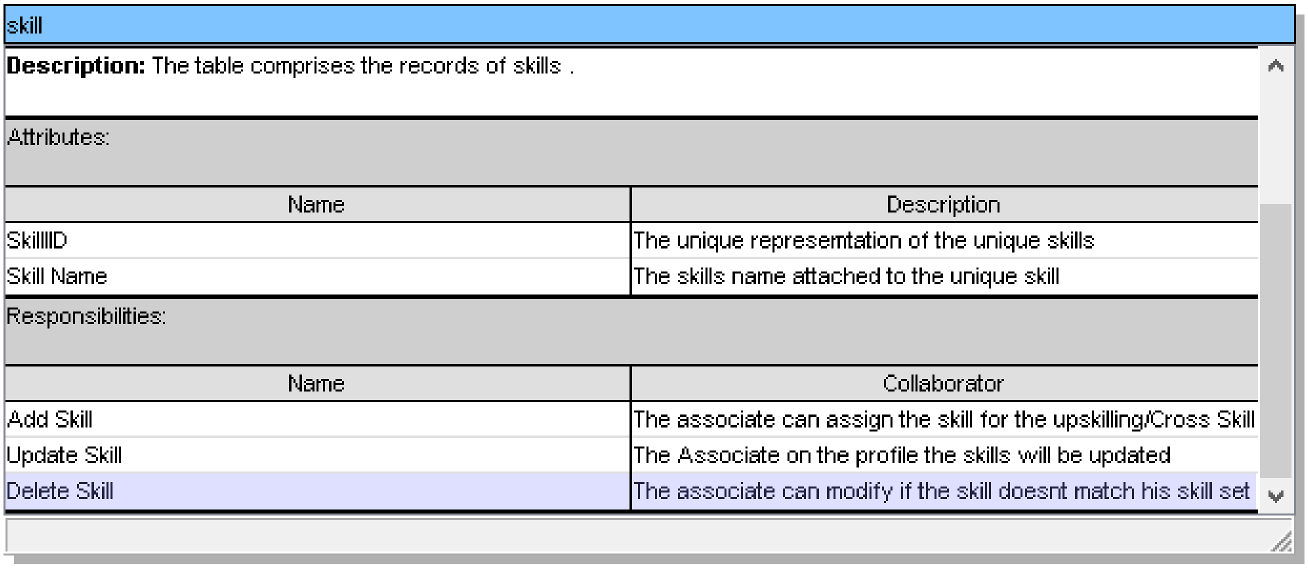
Description: the records contains the employee upskilled of the number of skills

Attributes:

Name	Description
EmpID	UniqueID number given to the Employee working in the org
SkillID	The Unique id given to the skill
Number of skills	The number of skills upskillef by the associate

Responsibilities:

Name	Collaborator



skill

Description: The table comprises the records of skills .

Attributes:

Name	Description
SkillID	The unique represemtation of the unique skills
Skill Name	The skills name attached to the unique skill

Responsibilities:

Name	Collaborator
Add Skill	The associate can assign the skill for the upskilling/Cross Skill
Update Skill	The Associate on the profile the skills will be updated
Delete Skill	The associate can modify if the skill doesnt match his skill set

3. **Method Specification Form**

Method Name: SelectProject	Class Name: Employee	**ID**: 101
Contract ID: 123	**Programmer**: Rohan	**Due Date**: 10/24/2022
Programming Language: Python		
Triggers/Events:	Employee wants to select a project	
Arguments Received: **Data Type**:	ProjectID Integer	
Arguments Returned: **Data Type**	ProjectName,ProjectID, EmpID Integer, string	
Algorithm Specification: 1. Select a valid project Id from UI 2. SelectProject method will be invoked after receiving ProjectId as parameter. 3. ProjectName and ProjectID will be read from database and DB connection will be setup. 4. Relationship between employee and project will be established in DB		

Misc. Notes: None.

Method Name: SelectSkill	Class Name: Employee	**ID**: 102
Contract ID: 124	**Programmer**: Vishal	**Due Date**: 10/28/2022
Programming Language: Python		
Triggers/Events:	Employee wants to select a skill	
Arguments Received: **Data Type**:	SkillName,SkillID Integer,String	
Arguments Returned: **Data Type**	AvailableSkills,SkillID String,Integer	
Algorithm Specification: 1. Select a valid skill from UI. 2. SelectSkill method will be invoked after receiving SkillID as parameter. 3. SkillName and SkillID will be read from database after DB connection will be setup. 4. Available skills will be shown to user. 5. After user selects a skill, relation will be setup between the EmpID and SkillID		
Misc. Notes: None.		

Method Name: AssignProject	Class Name: Employee	**ID**: 104
Contract ID: 125	**Programmer**: Saloni	**Due Date**: 11/24/2022
Programming Language: Python		
Triggers/Events:	Manager wants to select an employee for project	
Arguments Received:	EmpID, ProjectID, MangerID	

Data Type:	Integer
Arguments Returned: **Data Type**	ProjectName,ProjectID, EmpID, EmpName, ManagerID Integer, string
Algorithm Specification: 1. Manger will check for available employee for a project. 2. Employee data will be read from database. 3. Manager selects an employee for project. 4. ProjectName,ProjectID, EmpID, EmpName, ManagerID will be returned.	
Misc. Notes: None.	

Method Name: ScheduleInterview	Class Name: Interview	**ID**: 106
Contract ID: 126	**Programmer**: yeshwanth	**Due Date**: 11/29/2022
Programming Language: Python		
Triggers/Events:	Manager selects an employee for the project	
Arguments Received: **Data Type**:	EmpID, ProjectID, MangerID Integer	
Arguments Returned: **Data Type**	InterviewID,ProjectName,ProjectID, EmpID, EmpName, ManagerID Integer, string	
Algorithm Specification: 1. Manger will check for available employee for a project and select an employee for project. 2. Employee data will be read from database. 3. Interview will be scheduled between manager and employee. 4. InterviewID will be written to database.		

Misc. Notes: None.

Method Name: Addproject	Class Name: Project	**ID**: 108
Contract ID: 130	**Programmer**: Liza	**Due Date**: 12/29/2022
Programming Language: Python		
Triggers/Events:	Manager needs to add a new project which needs employees	
Arguments Received: **Data Type**:	ProjectID, ManagerID Integer	
Arguments Returned: **Data Type**	ProjectName,ProjectID, ManagerID Integer, string	
Algorithm Specification: 1. Manger will add new project. 2. ProjectID and ProjectName will be written to database.		
Misc. Notes: None.		

Method Name: DeleteProject	Class Name: Project	**ID**: 110
Contract ID: 138	**Programmer**: Liza	**Due Date**: 12/20/2022
Programming Language: Python		
Triggers/Events:	Manager needs to delete a project which no longer requires employees	
Arguments Received: **Data Type**:	ProjectID, ManagerID Integer	

Arguments Returned: **Data Type**	ProjectName,ProjectID, ManagerID Integer, string
Algorithm Specification: 1. Manager will delete the project will no longer has employee requirement. 2. ProjectID and ProjectName will be deleted from database after DeleteProject() runs. 3.	
Misc. Notes: None.	

Method Name: MapProject	Class Name: Project	**ID**: 112
Contract ID: 138	**Programmer**: Liza	**Due Date**: 01/20/2023
Programming Language: Python		
Triggers/Events:	Manager needs to map an employee to project	
Arguments Received: **Data Type**:	ProjectID, ManagerID, EmpID Integer	
Arguments Returned: **Data Type**	ProjectName,ProjectID, ManagerID, EmpID Integer, string	
Algorithm Specification: 1. Manager will check available employee and map the resource to the project. 2. MapProject() will link employee to the project in database.(Association relationship) 3. MapProject() will call ScheduleInterview() to schedule an interview.		
Misc. Notes: None.		

Method Name: AddSkill	Class Name: Skill	**ID**: 116
Contract ID: 140	**Programmer**: Rohan	**Due Date**: 02/20/2023

Programming Language: Python	
Triggers/Events:	Manger wants to add hot technology skills required by clients for new projects
Arguments Received: **Data Type**:	SkillID,SkillName Integer,string
Arguments Returned: **Data Type**	SkillID Integer
Algorithm Specification: 1. Manager adds new skills which are in demand. 2. AddSkill() will add the skill to database and make it available to Employee() to select.	
Misc. Notes: None.	

Method Name: UpdateSkill	Class Name: Skill	**ID**: 117
Contract ID: 141	**Programmer**: Rohan	**Due Date**: 02/28/2023
Programming Language: Python		
Triggers/Events:	Manger wants to update skill	
Arguments Received: **Data Type**:	SkillID,SkillName Integer,string	
Arguments Returned: **Data Type**	SkillID Integer	
Algorithm Specification: 1. Manager update skills. 2. UpdateSkill() will perform update operation on database. 3. Skill will be updated with new value.		

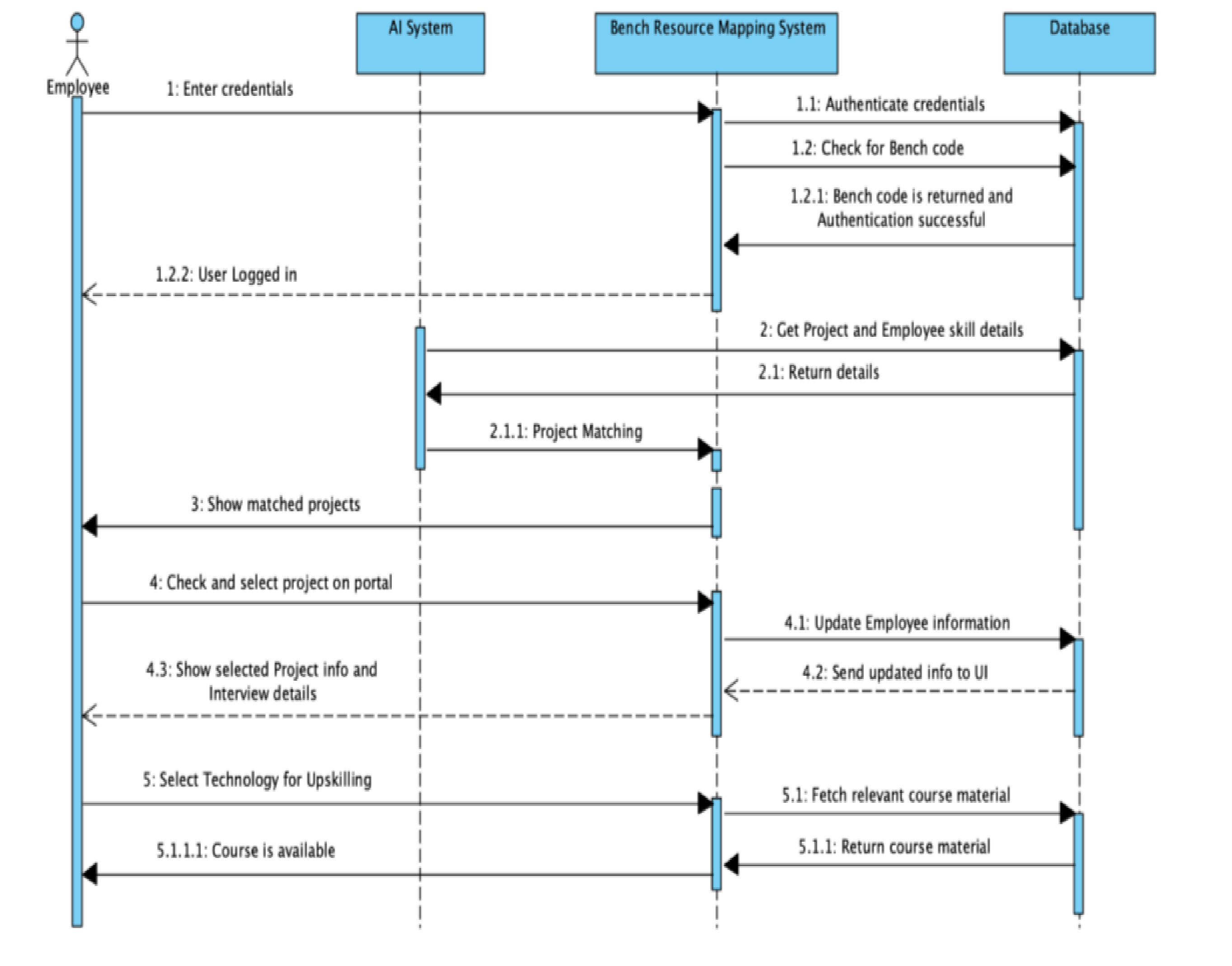
Misc. Notes: None.

Method Name: DeleteSkill	Class Name: Skill	**ID**: 118
Contract ID: 142	**Programmer**: Rohan	**Due Date**: 03/01/2023
Programming Language: Python		
Triggers/Events:	Manger wants to Delete skill	
Arguments Received: **Data Type**:	SkillID,SkillName Integer,string	
Arguments Returned: **Data Type**	SkillID Integer	
Algorithm Specification: 1. Manager deletes a skill no longer in demad. 2. DeleteSkill() will perform delete operation on database. 3. Skill record will be deleted.		
Misc. Notes: None.		

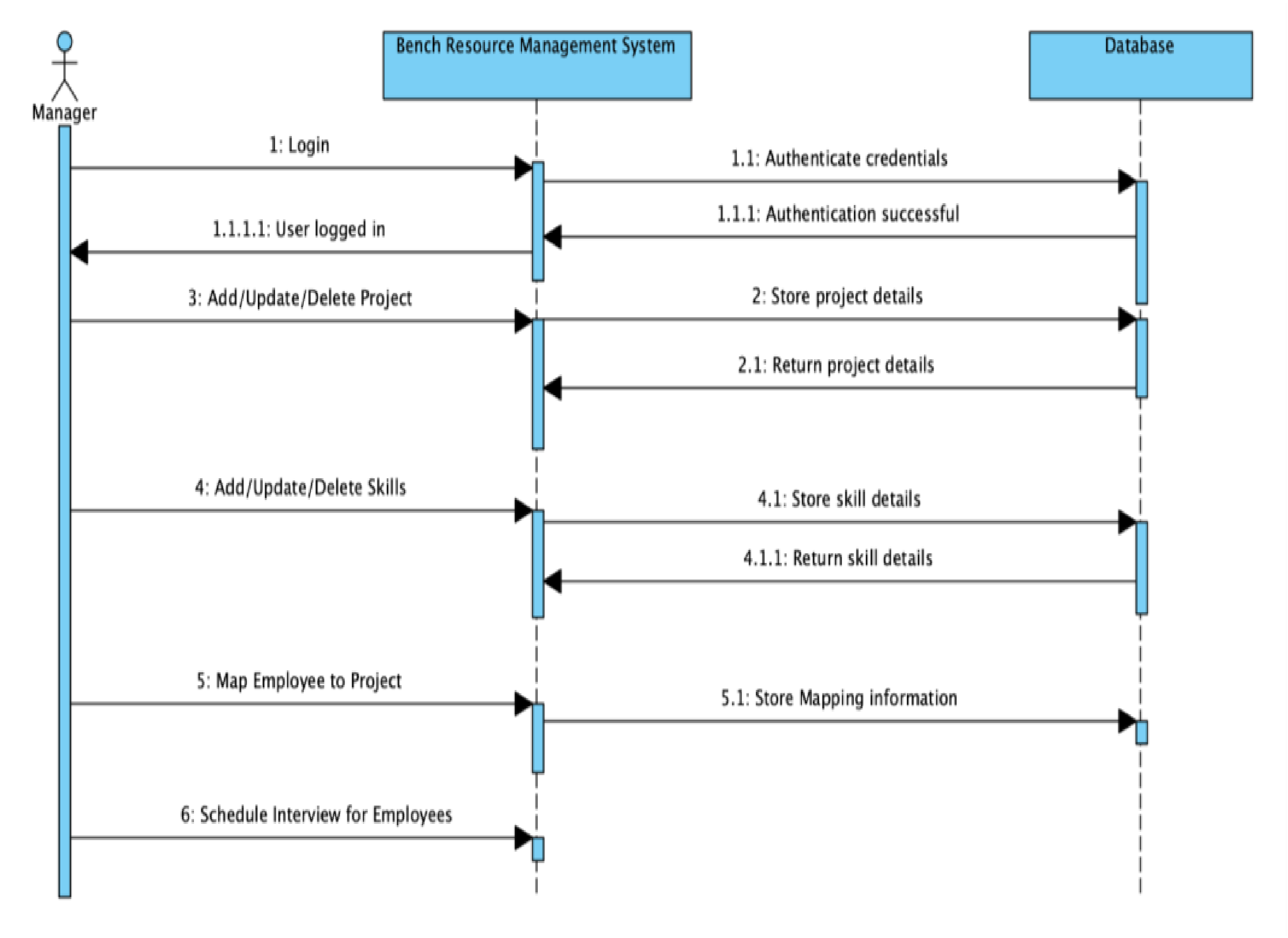
BEHAVIOURAL MODELS

1. Sequence Diagram:

a. Employee:

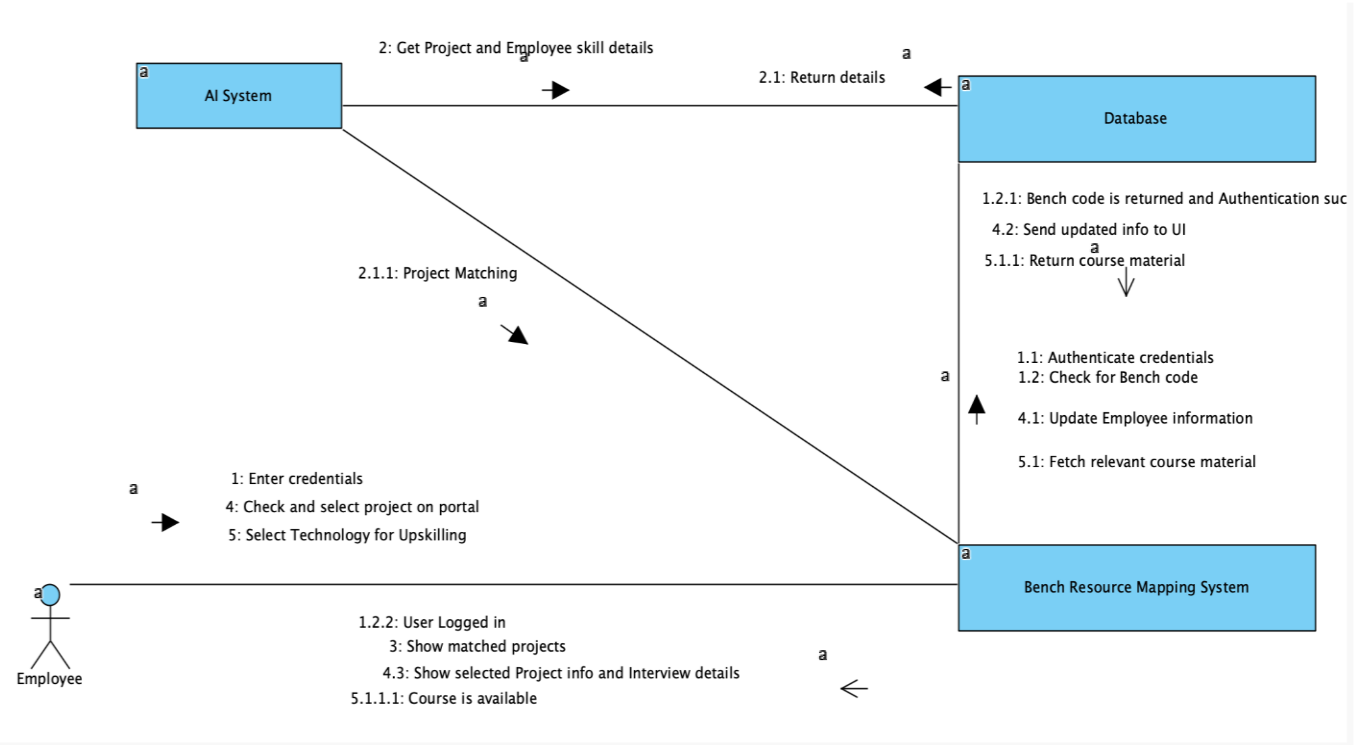

Employee
AI System
Bench Resource Mapping System
Database
1: Enter credentials
1.1: Authenticate credentials
1.2: Check for Bench code
1.2.1: Bench code is returned and Authentication successful
1.2.2: User Logged in
2: Get Project and Employee skill details
2.1: Return details
2.1.1: Project Matching
3: Show matched projects
4: Check and select project on portal
4.1: Update Employee information
4.2: Send updated info to UI
4.3: Show selected Project info and Interview details
5: Select Technology for Upskilling
5.1: Fetch relevant course material
5.1.1: Return course material
5.1.1.1: Course is available

b. Manager:


Manager
Bench Resource Management System
Database
1: Login
1.1: Authenticate credentials
1.1.1: Authentication successful
1.1.1.1: User logged in
3: Add/Update/Delete Project
2: Store project details
2.1: Return project details
4: Add/Update/Delete Skills
4.1: Store skill details
4.1.1: Return skill details
5: Map Employee to Project
5.1: Store Mapping information
6: Schedule Interview for Employees

2. Communication Diagrams:

a. Employee:



AI System
Database
Bench Resource Mapping System
Employee
2: Get Project and Employee skill details
2.1: Return details
1.2.1: Bench code is returned and Authentication suc
4.2: Send updated info to UI
5.1.1: Return course material
2.1.1: Project Matching
1.1: Authenticate credentials
1.2: Check for Bench code
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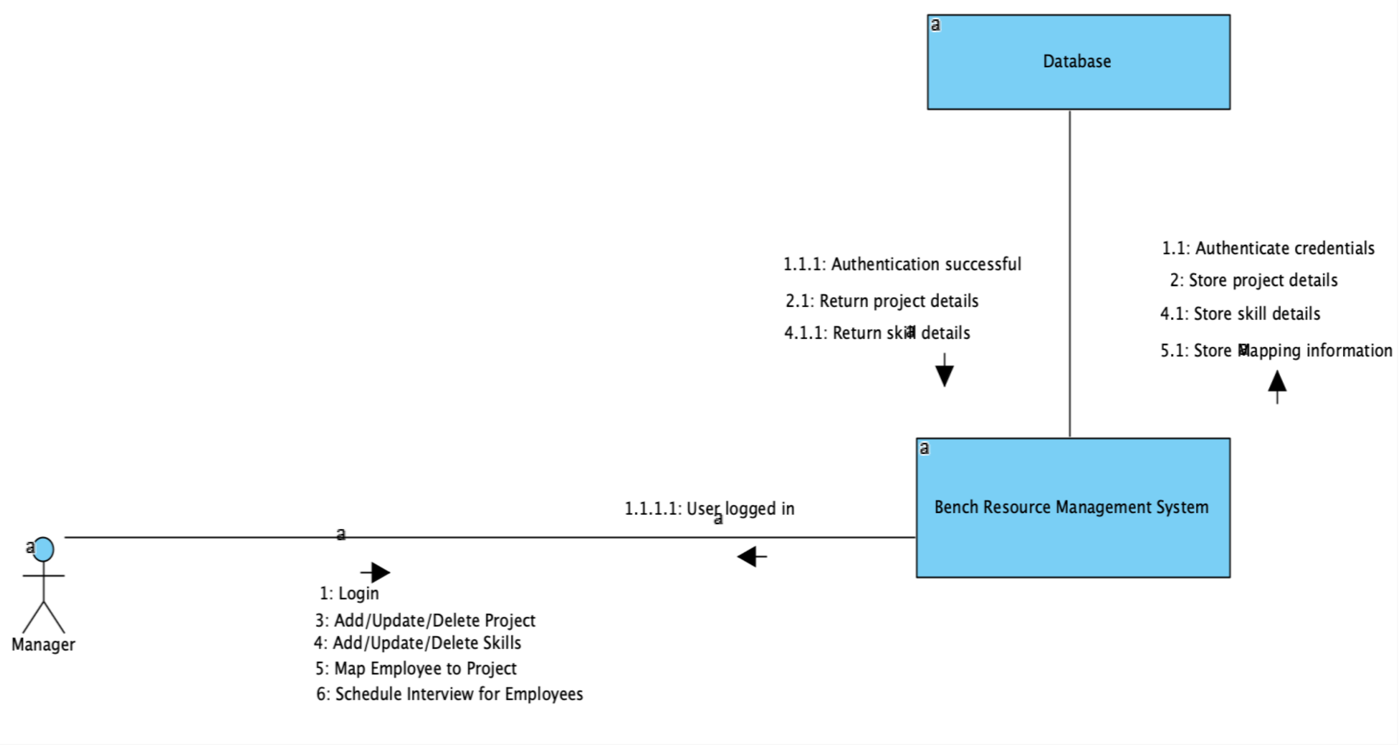
5.1: Fetch relevant course material
1: Enter credentials
4: Check and select project on portal
5: Select Technology for Upskilling
1.2.2: User Logged in
3: Show matched projects
4.3: Show selected Project info and Interview details
5.1.1.1: Course is available

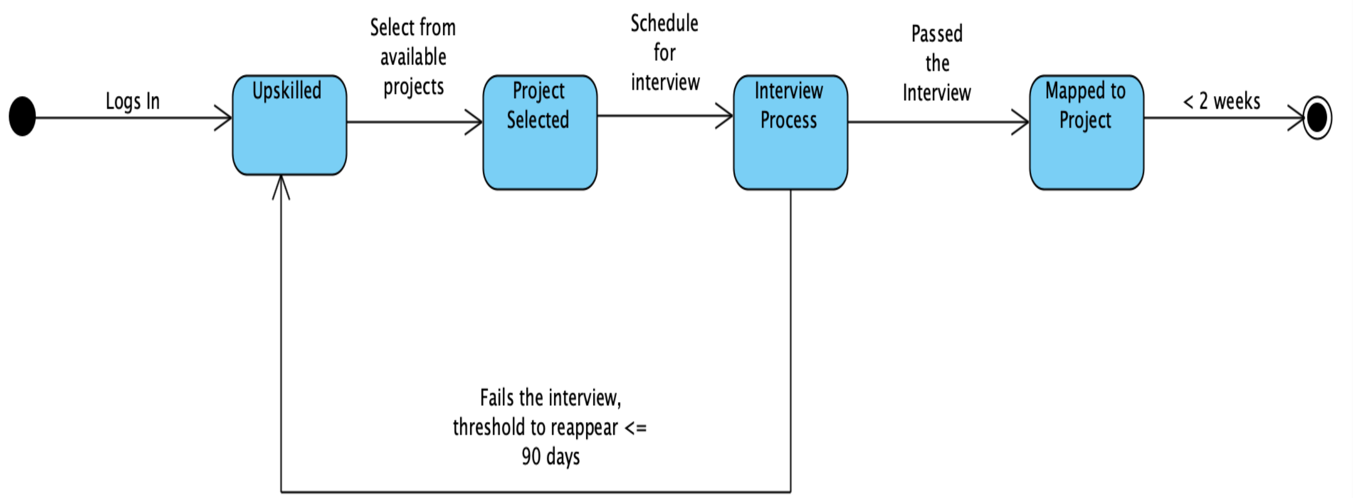
b. Manager:



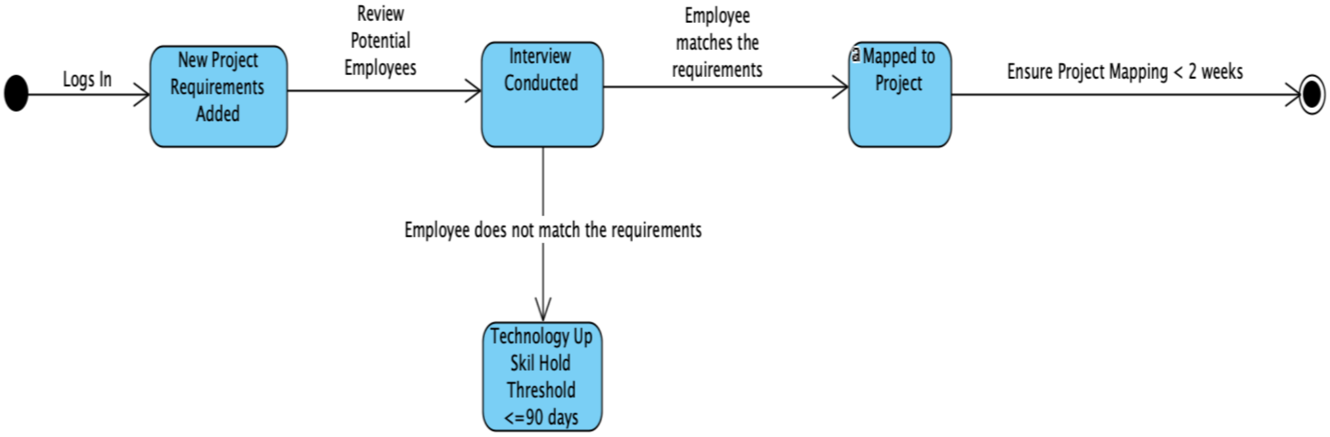
Database
Bench Resource Management System
Manager
1.1.1: Authentication successful
2.1: Return project details
4.1.1: Return skill details
1.1: Authenticate credentials
2: Store project details
4.1: Store skill details
5.1: Store Mapping information
1.1.1.1: User logged in
1: Login
3: Add/Update/Delete Project
4: Add/Update/Delete Skills
5: Map Employee to Project
6: Schedule Interview for Employees

3. State Diagrams:

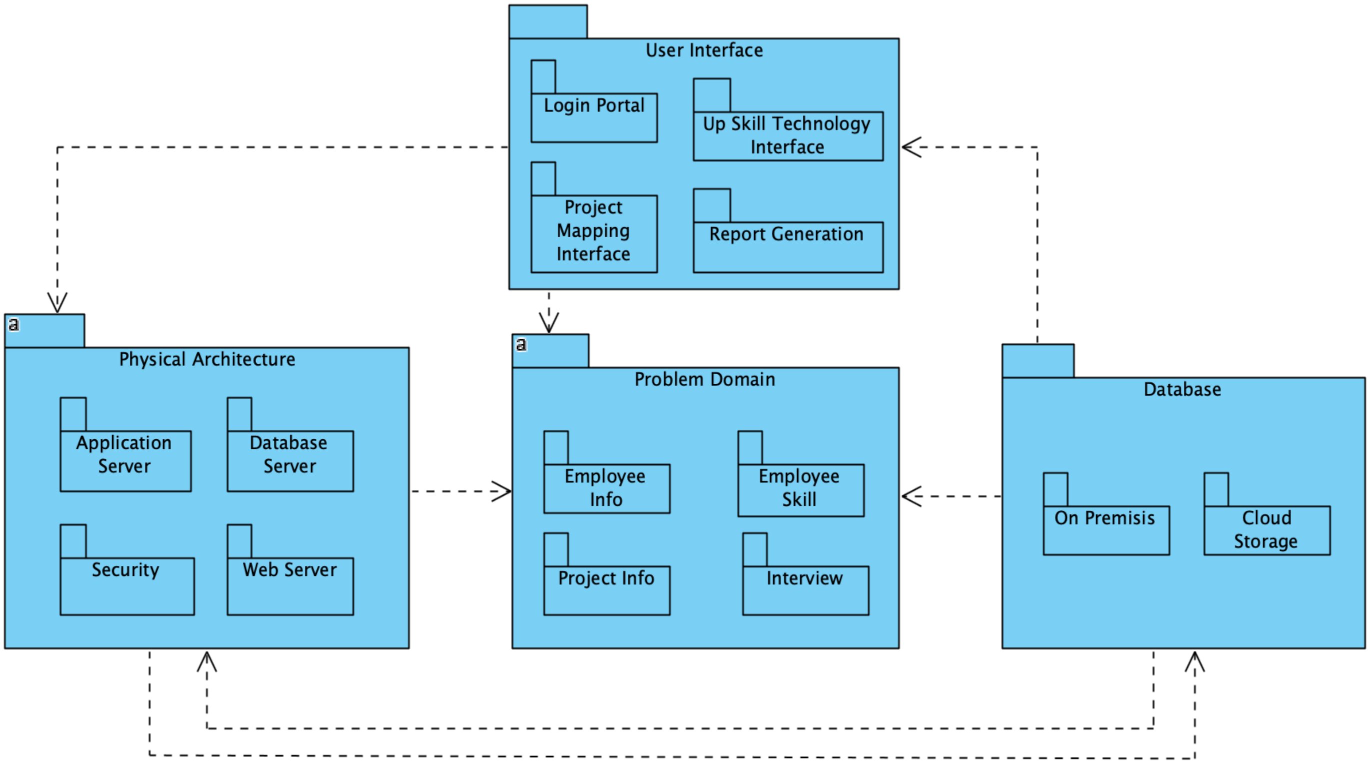
a. Employee:



b. Manager:


Logs In
New Project Requirements Added
Review Potential Employees
Interview Conducted
Employee matches the requirements
a Mapped to Project
Ensure Project Mapping < 2 weeks
Employee does not match the requirements
Technology Up Skil Hold Threshold <=90 days

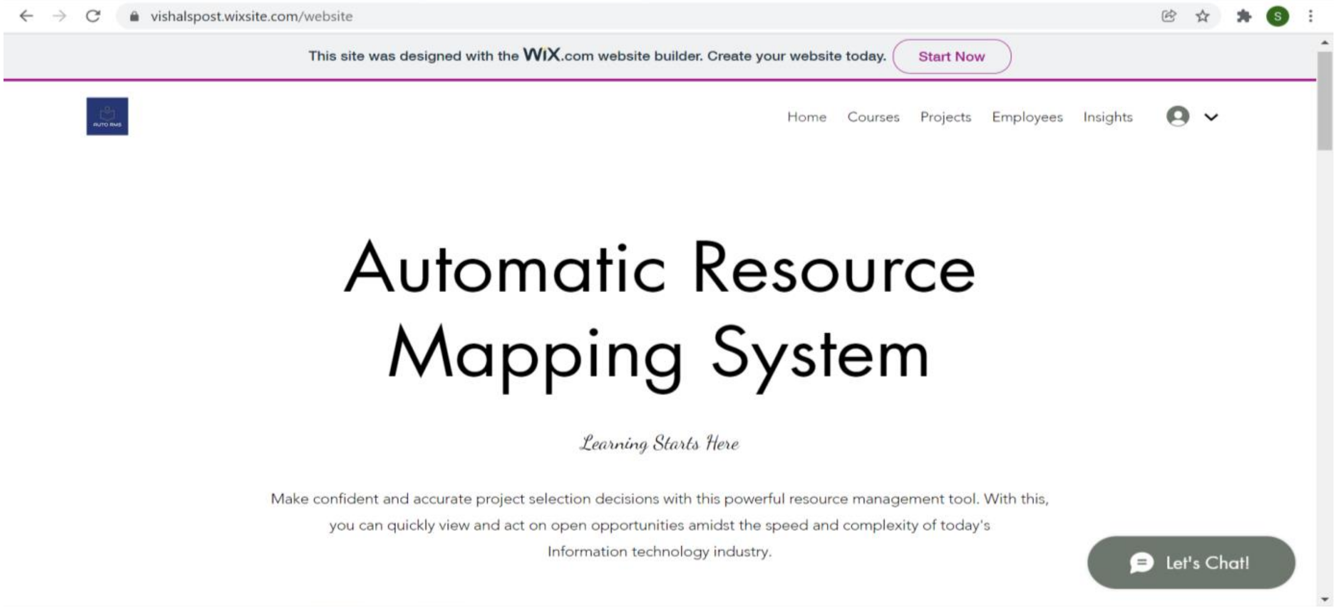
4. Package Diagram:



Design Documents

Sample user interface/website has been created by our team to get insights into what the system looks like. It is the job of development team to create UI but as an analyst we can get into the basic functionalities. Website URL: https://vishalspost.wixsite.com/website

1. Homepage:



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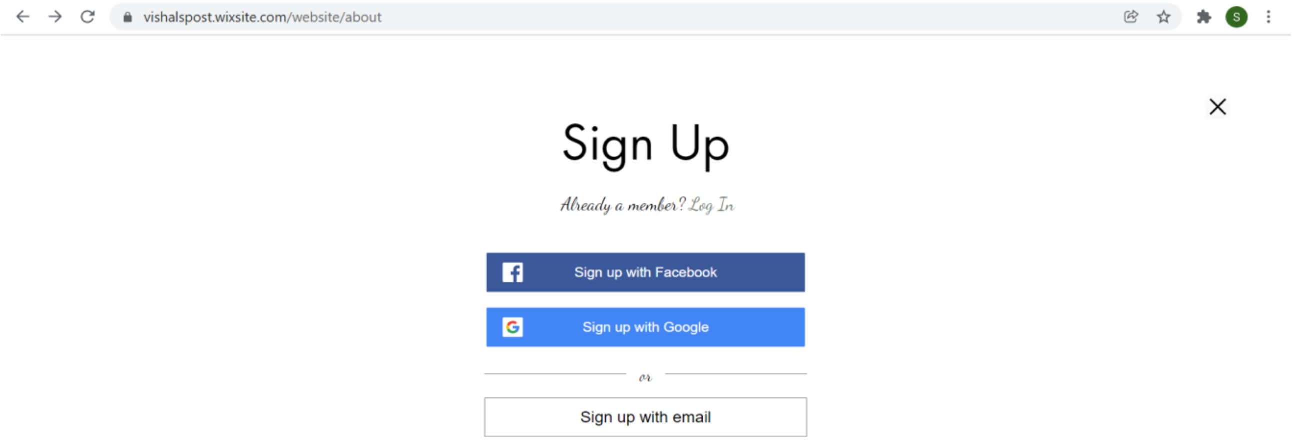
Automatic Resource Mapping System

Learning Starts Here

Make confident and accurate project selection decisions with this powerful resource management tool. With this, you can quickly view and act on open opportunities amidst the speed and complexity of today's Information technology industry.

2. Login page:



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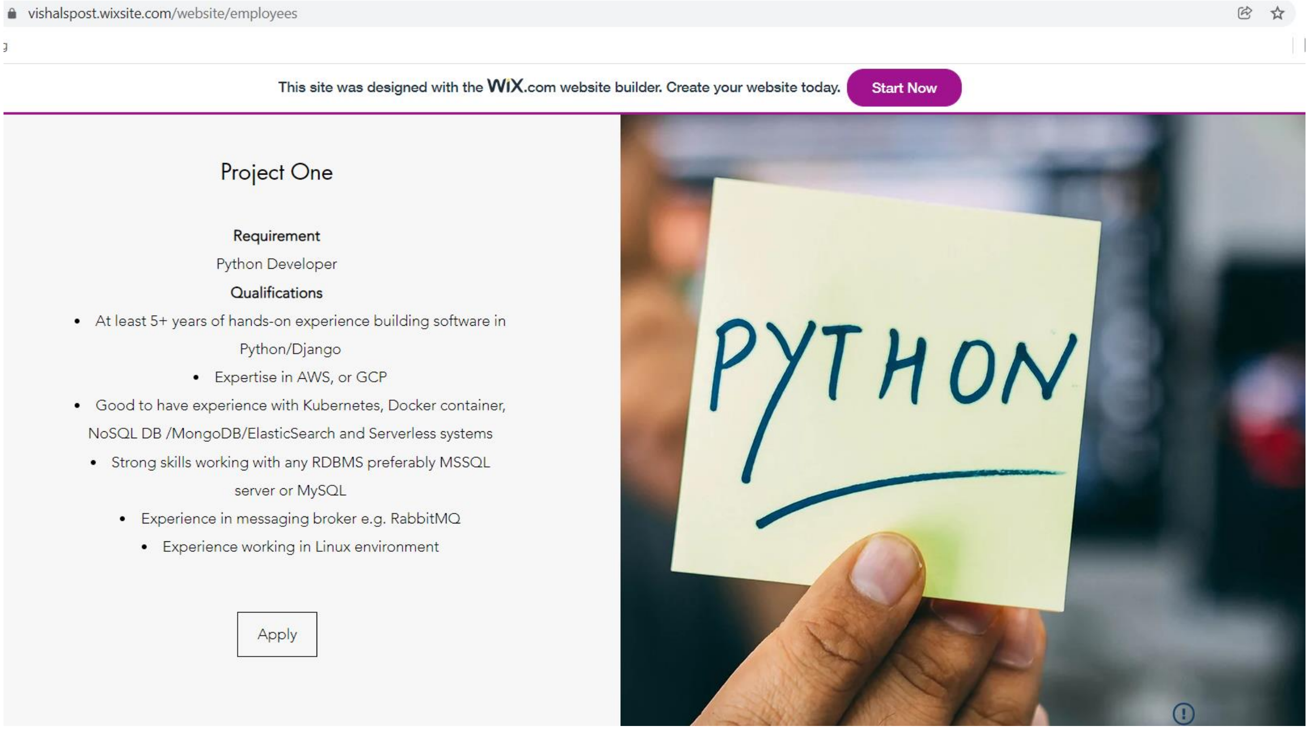
3. Bench employees can see matched projects as per their skills and apply:



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Project One

Requirement

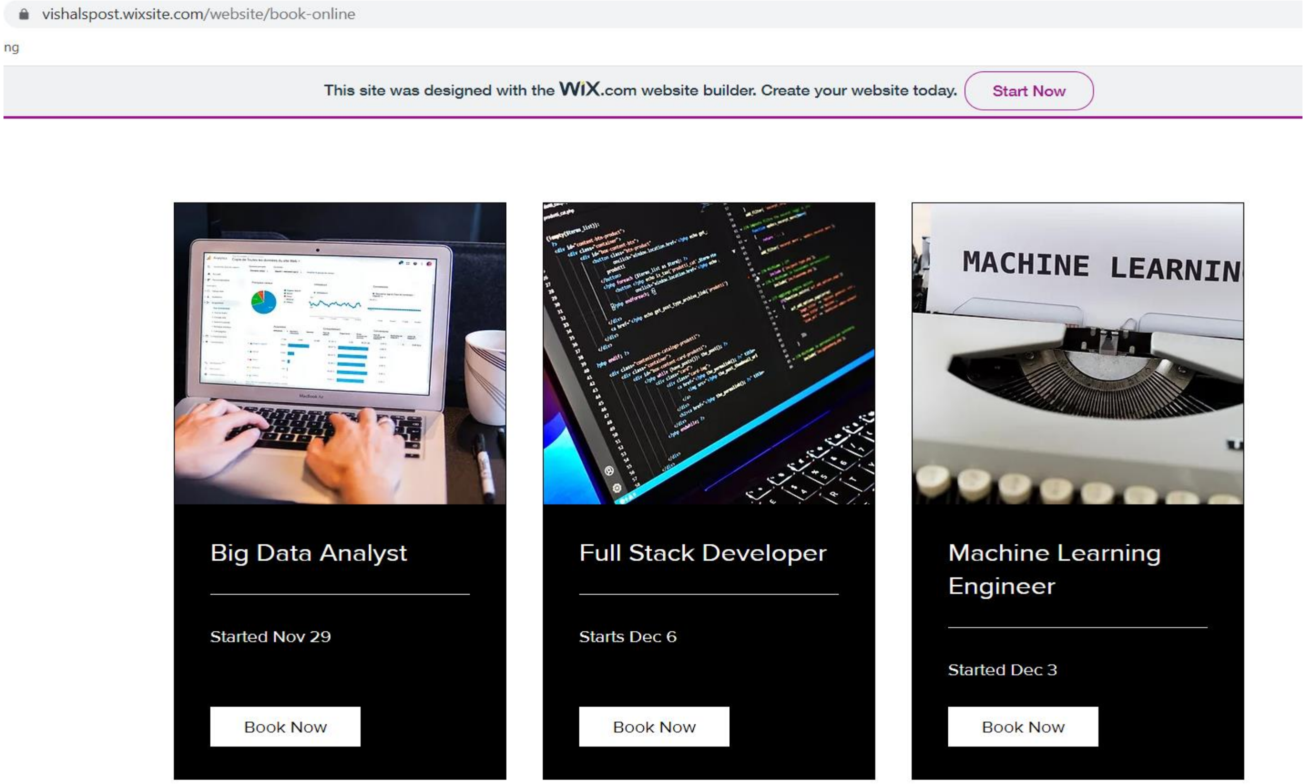
Python Developer

Qualifications

- At least 5+ years of hands-on experience building software in Python/Django
- Expertise in AWS, or GCP
- Good to have experience with Kubernetes, Docker container, NoSQL DB /MongoDB/ElasticSearch and Serverless systems
- Strong skills working with any RDBMS preferably MSSQL server or MySQL
- Experience in messaging broker e.g. RabbitMQ
- Experience working in Linux environment

Apply

4. Employees can choose upskill technology:



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Big Data Analyst

Started Nov 29

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Full Stack Developer

Starts Dec 6

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Machine Learning Engineer

Started Dec 3

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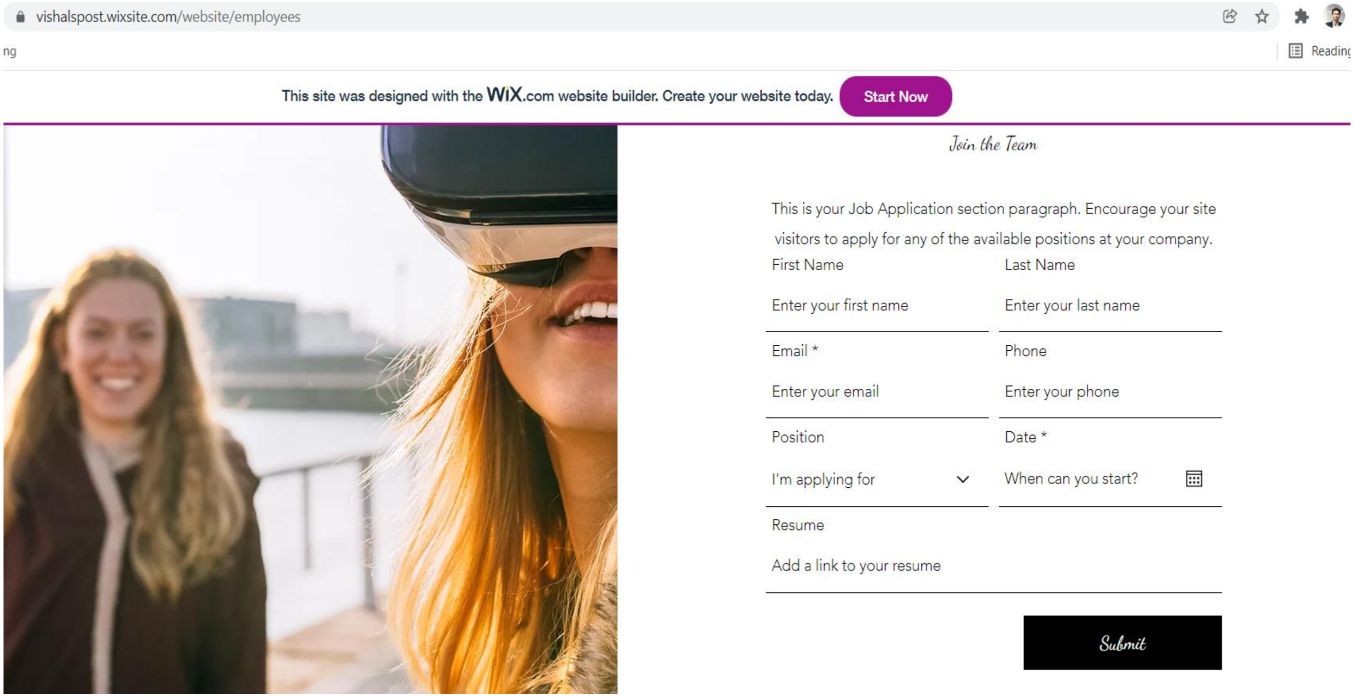
5. Bench employees can upload resume:



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This is your Job Application section paragraph. Encourage your site visitors to apply for any of the available positions at your company.

First Name
Enter your first name

Last Name
Enter your last name

Email *
Enter your email

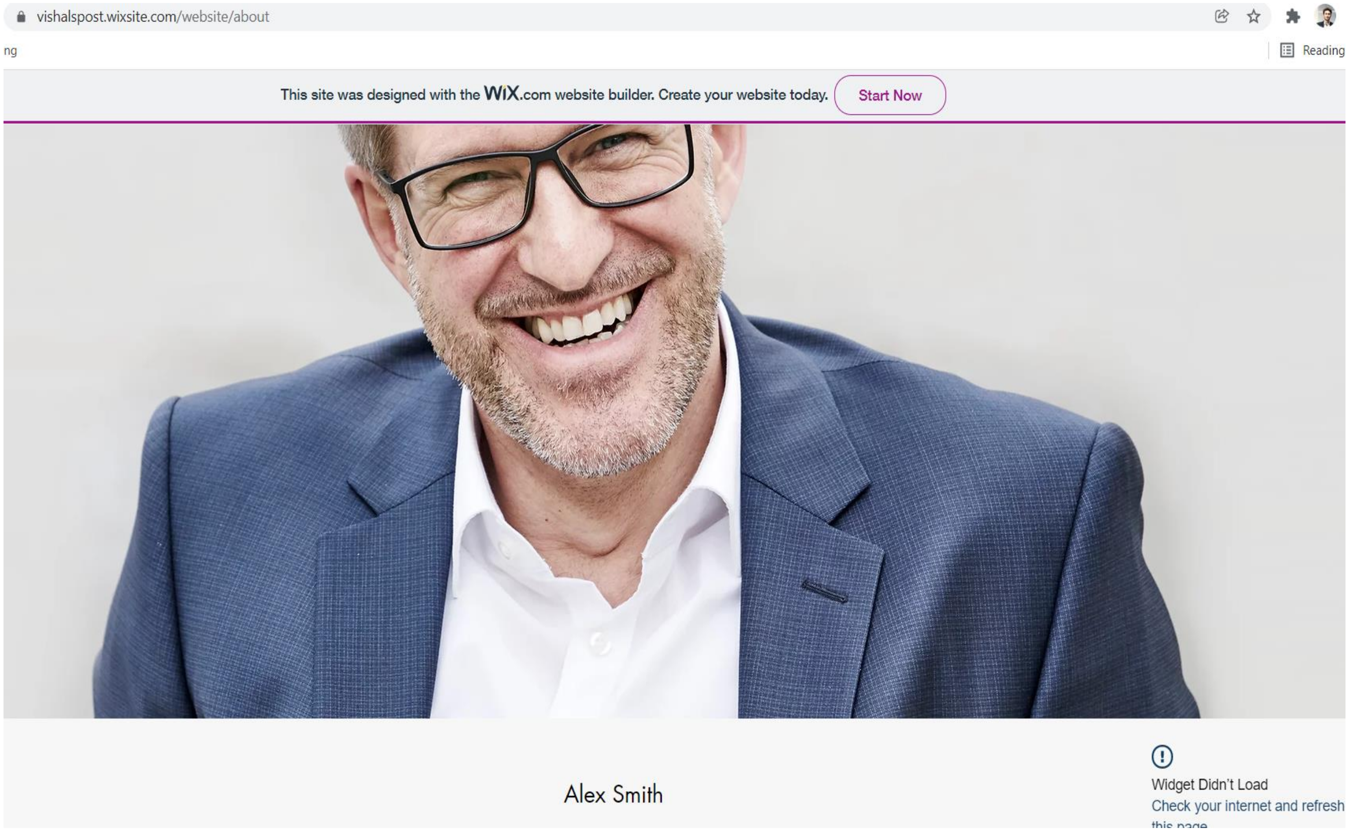
Phone
Enter your phone

Position
I'm applying for

Date *
When can you start?

Resume
Add a link to your resume

6. Managers can see available employees and their skillset:



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Alex Smith

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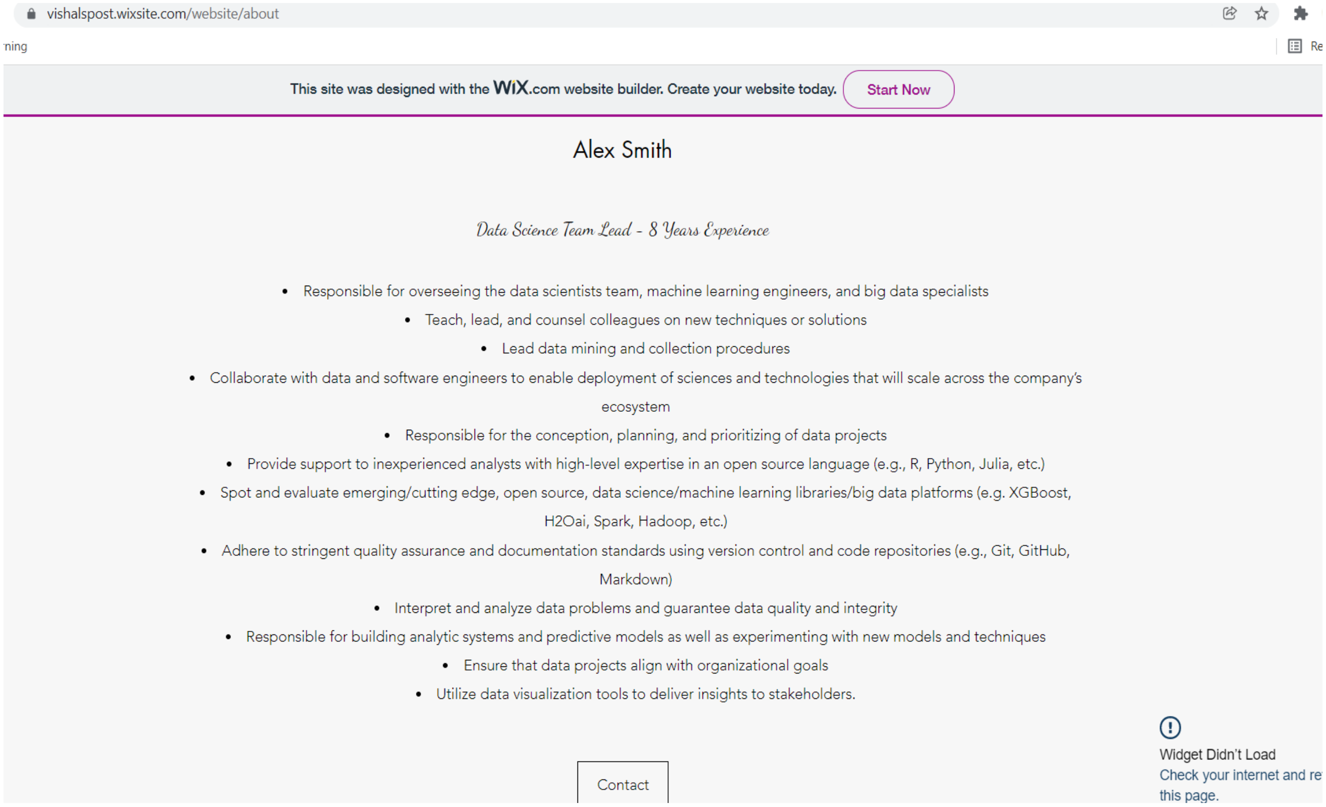
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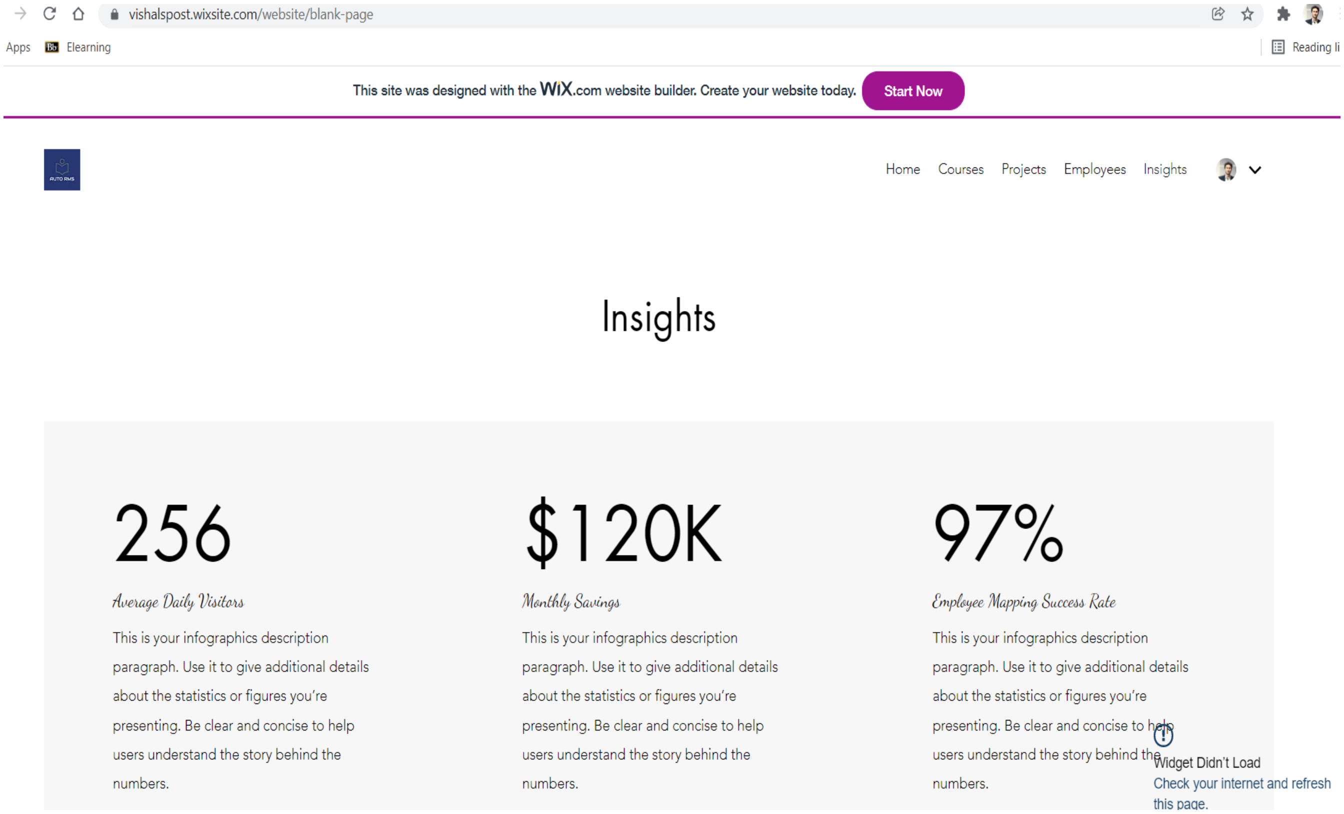
Alex Smith

Data Science Team Lead - 8 Years Experience

- Responsible for overseeing the data scientists team, machine learning engineers, and big data specialists
- Teach, lead, and counsel colleagues on new techniques or solutions
- Lead data mining and collection procedures
- Collaborate with data and software engineers to enable deployment of sciences and technologies that will scale across the company's ecosystem
- Responsible for the conception, planning, and prioritizing of data projects
- Provide support to inexperienced analysts with high-level expertise in an open source language (e.g., R, Python, Julia, etc.)
- Spot and evaluate emerging/cutting edge, open source, data science/machine learning libraries/big data platforms (e.g. XGBoost, H2Oai, Spark, Hadoop, etc.)
- Adhere to stringent quality assurance and documentation standards using version control and code repositories (e.g., Git, GitHub, Markdown)
- Interpret and analyze data problems and guarantee data quality and integrity
- Responsible for building analytic systems and predictive models as well as experimenting with new models and techniques
- Ensure that data projects align with organizational goals
- Utilize data visualization tools to deliver insights to stakeholders.

7. Website insights: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Insights

256

Average Daily Visitors

This is your infographics description paragraph. Use it to give additional details about the statistics or figures you're presenting. Be clear and concise to help users understand the story behind the numbers.

$120K

Monthly Savings

This is your infographics description paragraph. Use it to give additional details about the statistics or figures you're presenting. Be clear and concise to help users understand the story behind the numbers.

97%

Employee Mapping Success Rate

This is your infographics description paragraph. Use it to give additional details about the statistics or figures you're presenting. Be clear and concise to help users understand the story behind the numbers.

Testing

Organizations tend to spend more on testing a system than to develop/code it. Testing is done at every stage of SDLC, and test plan keeps on modifying as the system evolves. Rigorous testing is a must so that all the functionality is checked before the product is launched in market. Specialized testing teams are present in organization who are do this task. We can thus infer how important the testing is for a newly developed system.

We will be considering below types of testing:

1. **Unit testing:**

   In this type of testing, individual units or functions of software testing. In our case we will be testing each class individually and checking whether the methods and attributes are aligned with our concept and performing as expected. It mainly has one or a few inputs and produces a single output.

   Examples of test cases:

   - Is manager able to modify projects in system
   - Can employee select from all viewable project
   - Can skills be modified

   Our classes will be checked independently without any interference from other classes. Ideally high cohesion is required to create good classes and thus more test cases will pass.

2. **Integration testing:**

   It is done to assess whether a set of classes that must work together without error. More than one classes in our system are interacting with each other through message exchange and triggering methods to achieve functionality.

Examples of test cases:

- Can employee select from upskill technologies available (Employee & Skill classes interacting)
- Is manager able to schedule interview call for an employee (Employee & Interview classes interacting)

3. **System testing:**

Combining all classes in our system to see the overall functionality of the system.
This includes meeting both functional and non-functional requirements.

Examples of test cases:

- Only manager should be able to see available bench employees
- Only bench employees should be able to login and see available projects and not the employees already in a project (role-based access)
- All employees can check upskill courses and can enroll
- Employees in an organization can only open the portal and should not be accessible to people outside organization
- Portal should be capable enough to handle users equal to or grater than size of the organization

4. **Acceptance testing:**

Being an internal company portal, beta testing can be done by taking a selected group of employees and asking them to use the portal and give feedback. Improvements can be done based on potential problems coming in practical scenario.

Project Management Documents

Allocation of activities to team members: The group met and collaborated on every aspect of this project.

Meeting Minutes:

Meeting 1

September 19, 2021 Time Spent: 2 Hours

Attendees:

Liza Thakor, Saloni Nitin Bhamare, Rohan Sharma, Puvvaula Yeshwanth, Vishal Eswaran

Agenda:

Project Identification and selection

- Brainstormed on different project concepts and agreed on one project.

Problem Statement:

- Define the project scope
- Analyze the constraints
- Documented everything

Project Identification and selection:

- Team members initially came up with a different project concept
- Each project concept was thoroughly analyzed to ensure that it meets the guidelines provided for project selection
- The team decided to go with the automatic bench resource mapping

Problem Statement:

- The team came into an agreement as to what the scope of the project should be and what are all constraints for this project
- The team decided to understand the phases in SDLC and proceed with core things for the project

Next Meeting:

September 26, 2021

Next Meeting Agenda:

- Create a system request

Meeting 2

September 26, 2021 Time Spent: 3 Hours

Attendees:

Liza Thakor, Saloni Nitin Bhamare, Rohan Sharma, Puvvaula Yeshwanth, Vishal Eswaran

Agenda:

Create a system request

- Team chose the Project name, Project sponsor and what is the Business need and value that can be added to existing system.
- Project Scope, as in system and to be system was discussed to go more deeply into understanding the system.
- Project cost based on resources needed and infrastructure requirements was calculated.
- Tangible and intangible value aspects were discussed.

- Team also discussed the basic flow how the system will work with the help of flowchart.
- Functional and non-functional requirements covered.
- Constraints out of scope were noted and whole discussion was documented.

Next Meeting:

October 03, 2021

Next Meeting Agenda:

Use case diagram (Functional modelling)

Meeting 3

October 03, 2021 Time Spent: 2 Hours

Attendees:

Liza Thakor, Saloni Nitin Bhamare, Rohan Sharma, Puvvaula Yeshwanth, Vishal Eswaran

Agenda:

Create a use case diagram:

- Healthy discussion on the entire system to be created and uncovered new ideas which can be integrated to our current system. We also added upskill process along with project mapping system
- Number of actors and external system which needs to interact with our system were listed.
- Use cases were created and combined similar things into one use case.
- Use case correspondence to a particular actor was discussed.
- First Use case diagram was created.

Next Meeting:

October 10, 2021

Next Meeting Agenda:

Class basics and CRC cards

Meeting 4

October 10, 2021 Time Spent: 2 Hours

Attendees:

Liza Thakor, Saloni Nitin Bhamare, Rohan Sharma, Puvvaula Yeshwanth, Vishal Eswaran

Agenda:

Understand Class basics and create CRC cards

- Keeping in mind the need to create classes in coming future, CRC cards were created based on possible classes
- Use case diagram was modified and number of classes were made in accordance to use cases
- Details to be filled in each CRC were discussed so that everyone's viewpoint is covered, and team understands the class diagram clearly

Next Meeting:

October 17, 2021

Next Meeting Agenda:

Class diagram

Meeting 5

October 17, 2021 Time Spent: 3 Hours

Attendees:

Liza Thakor, Saloni Nitin Bhamare, Rohan Sharma, Puvvaula Yeshwanth, Vishal Eswaran

Agenda:

Create Class diagram

- Basics of what a class diagram were discussed and made clear to team members of how classes will be created (operations, methods, attributes)
- Classes were made taking help from use case diagram. Use case diagram was also modified to create uniformity among both class and use case diagram
- Brainstorming on attributes and methods to be created
- Connecting classes taking care of cardinality, relationships and many to many relationships

Next Meeting:

October 24, 2021

Next Meeting Agenda:

Sequence, communication and state diagrams

Meeting 6

October 24, 2021 Time Spent: 3 Hours

Attendees:

Liza Thakor, Saloni Nitin Bhamare, Rohan Sharma, Puvvaula Yeshwanth, Vishal Eswaran

Agenda:

Create sequence, communication and state diagram

- The control flow from a start point to a finish point showing the various decision paths that exist while the activity is being executed was discussed
- Different sequence diagram for employee and manger were created
- Communication diagram was made.
- Different possible states were discovered, and state diagram was completed.

Next Meeting:

November 07, 2021

Next Meeting Agenda:

Project presentation preparation

Meeting 7

November 07, 2021 Time Spent: 2 Hours

Attendees:

Liza Thakor, Saloni Nitin Bhamare, Rohan Sharma, Puvvaula Yeshwanth, Vishal Eswaran

Agenda:

Prepare for project presentation

- Presentation was created after filtering out the content to highlight what actually our system does and how it adds value to the organization.
- Team prepared for possible queries which can be raised by viewers by discussing the whole concept again so that everyone is on same point.

Next Meeting:

December 01, 2021

Next Meeting Agenda:

Creating user interface/website on wix

Meeting 8

December 01, 2021 Time Spent: 3 Hours

Attendees:

Liza Thakor, Saloni Nitin Bhamare, Rohan Sharma, Puvvaula Yeshwanth, Vishal Eswaran

Agenda:

Create UI/Website on WIX

- To get better insight into how the system practically works, a sample website was created on wix.
- Team created the UI and tried to achieve minimal user effort by achieving the functionality in maximum 3 clicks.
- Role based access was assigned based on whether a user is a bench employee or a manager.

Next Meeting:

Project completed. No more meetings.

REFERENCES

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- Official website of Visual Paradigm: https://www.visual-paradigm.com/