IIT INFORMATION PORTAL

Software Requirements Specification and Analysis

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INTRODUCTION

This chapter is a part of our software requirement specification for the project “IIT Information Portal”. In this chapter we will focus on the intended audience for this project.

PURPOSE

This document briefly describes the Software Requirement Analysis of IIT Information Portal. It contains the functional, non-functional and the supporting requirements and establishes a requirement’s baseline for the development of the system. The requirements contained in the SRS are independent, uniquely numbered and organized by topics. The SRS serves as an official means of communicating user requirements to the developer and provides a common reference point for both the developer team and the stakeholder community. The SRS will evolve over time as users and developers work together to validate, clarify and expand its contents.

INTENDED AUDIENCE

- This SRS report is intended for several audiences including the users(Teachers & Students) , admin, project managers, developers and testers.
- The users and admin will use this SRS to verify that the developer team has created a product that is acceptable to the customer.
- The project managers of the developer team will use this SRS to plan milestones and a delivery date, and ensure that the developing team is on track during development of the system.
- The designers will use this SRS as a basis for creating the system’s design.The designers will continually refer back to this SRS to ensure that the system they are designing will fulfill the customer’s needs.
- The developers will use this SRS as a basis for developing the system’s functionality. The developers will link the requirements

defined in this SRS to the software they create to ensure that they have created a software that will fulfill all of the customer's documented requirements.

- The testers will use this SRS to derive test plans and test cases for each documented requirement. When portions of the software are complete, the testers will run their tests on that software to ensure that the software fulfills the requirements documented in this SRS. The testers will again run their tests on the entire system when it is complete and ensure that all requirements documented in this SRS have been fulfilled.

CONCLUSION

This analysis of the audience helped us to focus on the users who will be using our analysis. This overall document will help each and every person related to this project to have a better idea about the project.

Goal Of This Project

We want to develop a web based platform. Using this platform the students of IIT (BSSE, MSSE, PGDIT,MIT) can add their academic information, intern information, professional career information where he/she works . A student can also add their project information, research information, higher studies information, and contact information. This platform will be very useful for students and teachers. This platform will help a user to know about project information done by students, research information, professional career information of students and also know the higher studies information.

IDENTIFYING THE STAKEHOLDERS

Stakeholder refers to any person or group who will be affected directly or indirectly by the system. Stakeholders include end-users who interact with the system and everyone else in an organization who may be affected by its installation. The CARS Cafeteria have limited number of stakeholders.They are:

- Teachers
- Students(BSSE, MSSE, MIT, PGDIT)

Requirements of different perspective:

BSSE CURRENT

- BSSE students need to develop projects for their Software Project Lab. That's why it will be easier for them if they can know about previous project done by IIT students.For example project's environment (web app, android app, desktop app), project's technology(project language, framework, tools etc),
  Which domain's(Data mining, Machine Learning, Information Security, Computer Network etc) project it is .

- BSSE students need to go for internships when they step in the 7th semester. If they can easily know any of his/her senior previously intern here or not, if yes then how many and who they are? What was their experience ? What is the culture of this organization ? And even he/she can make decisions about previous experience of their seniors that particular organization will be suitable for him/her or not .

- BSSE students need to go for an organizational visit. That time they face a great challenge and it is difficult to individually search for a suitable organization. But they don't know their seniors are working in the software industry and can help them easily.

- Higher studies is a dream for most of the graduate students and they want to go to a top class university for study. But how it could become practical, what can be the right path to achieve most of the students are unaware. But their seniors are already studying abroad and if they can learn direct sensation from them it will be very helpful.
- BSSE students can visualize the practical job market and which type of skill are necessary, which type of technology is necessary for the job market. So, they want to know about the current and previous professional careers of their seniors and their skill set .
- BSSE students organize many events and they need to invite their seniors to their event. Whenever they need to invite their seniors they simply sit with a long list and sequentially call them. But it is not an efficient way. Because all their seniors may not stay at home . If they want to know who is at home and abroad, it will be very easy for them to invite .

MSSE:

- MSSE students are mostly interested about what type of research IIT students previously done and which sector they did their research. What type of research are run by IIT students?
- MSSE students are also interested in Higher studies. IIT students are studying abroad .If they can know where and who is studying, he/she can know the reality and practical path about higher studies.
- MSSE students can visualize the practical job market and which type of skill are necessary, which type of technology is necessary for the job market. So, they want to know about the current and previous professional careers of IIT students and their skill set .
- Previous project information done by IIT students for example project's environment (web app, android app, desktop app), project's technology(project language, framework, tools etc), which domain's(Data mining, Machine Learning, Information Security, Computer Network etc) project it is, will help a student when he/she go for developing a project.

MIT/PGDIT:

- Previous project information done by IIT students for example project's environment (web app, android app, desktop app), project's technology(project language, framework, tools etc), which domain's(Data mining, Machine Learning, Information Security, Computer Network etc) project it is, will help a student when he/she go for developing a project.
- Previous and past professional careers of IIT students and their skillset will help PGDIT/MIT students to understand the job market and necessary skills.
- They are also interested in research content and higher studies information about IIT students.

Alumni(BSSE/MSSE/MIT/PGDIT):

- Alumni students search for people with specific skill sets to recruit for industry or any other project.

  For example, an alumni student searching for two graduates who are experts in .net and mssql . He/she can easily search for them if all the information is available on an organized platform.
- Alumni students are also interested in research and higher studies information of IIT students.

Teachers:

- For example a teacher is working on research content. Similar types of research are previously done or not, still running or not ? if done by whom it was done? He can easily find it by searching with the title.
- Teachers can find students studying abroad with a university or area name.
- Teachers can search people for project development, research work or industry ask him/her employee for recruitment.

Faculty Benefit:

- This platform will help faculty to reduce the gap between industry and academia . Faculty can adapt with industry and make education more productive.
- Faculty can benefit when they search for a company to send students to intern.

Usage Scenario:

IIT Information Portal

1.Introduction

We want to develop a web based platform. Using this platform the students of IIT (BSSE, MSSE, PGDIT,MIT) can add their academic information, intern information, professional career information where he/she works . A student can also add their project information, research information, higher studies information, and contact information. This platform will be very useful for students and teachers. This platform will help a user to know about project information done by students, research information, professional career information of students and also know the higher studies information.

1: <u>Authentication:</u>

IIT Info Portal can only be used by a valid user. A valid user is authenticated by the following methods:

1.1: <u>Create Account:</u>

A user can enter the system by creating an account.
There are three types of user's accounts.

1. Admin: Admin account will be predefined.

2. Teacher: Teachers can create accounts by using their mail id. A confirmation code will be sent to his/her email id. Then the admin will approve the account.

3. Student: Student needs to provide the following information to create account:

    - Email address
    - Password
    - Name
    - Select IIT Programme (BSSE, PGDIT, MIT, MSSE) and Batch Number

After providing these, a confirmation code will be sent to the email id. Then the admin or batch coordinator will approve the account.

A batch coordinator is a special type of user who is a representative student of the batch and he/she can approve student accounts of his/her batch.

1.2: Log-in:

To get the services of IIT Info Portal, a user must log in to his/her account by providing email followed by a password. If the password is correct he/she enters the system.
Otherwise, he/she can try again.

1.3: Change Password:

A user can change password after log in. To change the password he/she has to provide previous password and new password.

1.4: Password Recovery:

If a user forgets his/her password, he/she will choose the reset password option and provide his/her email id. Then a verification code will be sent to his/her email id. Using this code he/she has to authenticate first and change his/her password.

2: <u>Profile Management:</u>

Only Student users can create profiles. Teacher users can not create profiles.

Profile management will contain following information:

<u>Academic Information:</u>

Academic information will include iit program, session, batch, previous department and university(if not bsse), college.

<u>Contact Information:</u>

A user can add contact info to the profile. Contact information will contain Email id(additional), Mobile number, Github link, LinkedIn link, facebook link.

<u>Skill set:</u>

A user can add his/her skill set in his profile. The user can store programming language, tools and technology, skill domain in the profile.

Profile management will provide following operation:

- **Create profile:** Every student must have a profile.A profile may contain his/her academic information, contact information and skill set. And the profile will be created when a student creates an account.

- **Update information:** A student can update his/her profile information. But he/she will be restricted to update some selective information. That is college, session, iit program, batch, previous department and batch.
- **View profile:** A user can view his/her profile information and also view others profile information.

3. <u>Project Management:</u>

- **Create project:** A student can create a project. Project information will contain project title, project domain, project environment, tools & technology.and project category(Academic,personal).
- **Update project:** A student can update project information.
- **View project:** A user can view project information which is added by students.

A user who is a current student can not directly add projects and can not update project information. Whenever he/she adds projects or updates project information, the admin will verify it. After the verification project information will be updated.

4. <u>Professional Career Management:</u>

- **Add profession:** A student can add profession. Professional career information will contain the organization name, the type of the organization and join date to the organization. Then the user can add his/her designation of that organization.
  If the user changes organization he/she will add a new organization.

- **View profession:** A user will be able to view professional information of users.

5. <u>Research and Higher Studies Management:</u>

- **Add research:** A student can add research information. Research information will contain research titles and research domains.

- **View research:** A user will be able to view research information.

- **Add higher studies:** A student can add Higher Studies information.Higher Studies information will containStudy domain, University name and University's country name.

- **View higher studies:** A user will be able to view Higher Studies information.

6: Admin Work:

1. Admin will approve requests for authenticating accounts.
2. Admin can create and remove a batch coordinator for request approval.
3. Admin will approve projects of IIT current students .
4. Admin will add items to the drop down menu.

7: Search:

A user can search-

1. People
2. Project
3. Research

7.1: Search People:

If a user wants to search people by College name, University name and Department, Programme and Batch number, Organization name, Project environment, Project domain, Research domain, University name for higher studies or Country name for higher studies then he/she will select those items from the drop down option.
A user also can search people by skill set.

7.2: Search Project:

If a user wants to search projects by project environment and domain then he/she will select those items from the drop down option.
A user also can search projects by tools & technology.

7.3: Search Research:

If a user wants to search research by research title and domain then he/she will select those items from the drop down option.

8: <u>Drop Down Management:</u>

- **Add dropdown:** Only the admin will be able to add dropdown items. Drop Down option will show for the following category-
    - University name
    - Programme and Batch number
    - Organization name & Organization type
    - Project environment
    - Project domain
    - Research domain
    - Study domain for higher studies
    - University name and University's country name for higher studies

- **Show dropdown:** During adding or updating information of profile, project, profession, study and research and search dropdown items will be shown for the category.

- **Suggest Dropdown:** If a user does not find his/her desired dropdown option then he/she will select others option from the menu and suggest the desired option. After that a notification will be sent to admin and the admin will verify it and approve for the drop down menu.

9: <u>Notification:</u>

- <u>Notify Admin:</u> Whenever a user wants to create an account, add or update project information and wants to add a new item on drop down option, a notification will be sent to the admin.

- Notify User: A user will be notified after account creation through email.And also notify after confirmation project adding or updating .
- Batch Coordinator: A batch coordinator will be notified when a new user wants to create an account of his/her batch.

10: Access Log:

Access log will be created when a user log in to the system. The log will contain ip address, user email and date & time.

Use Case Diagram

A Use Case captures a contract that describes the system behavior under various conditions as the system responds to a request from one of its stakeholders. In essence, a Use Case tells a stylized story about how an end user interacts with the system under a specific set of circumstances. A Use Case diagram simply describes a story using corresponding actors who perform important roles in the story and makes the story understandable for the users. The first step in writing a Use Case is to define that set of “actors” that will be involved in the story. Actors are the different people that use the system or product within the context of the function and behavior that is to be described. Actors represent the roles that people play as the system operators. Every user has one or more goals when using the system.

Primary Actor

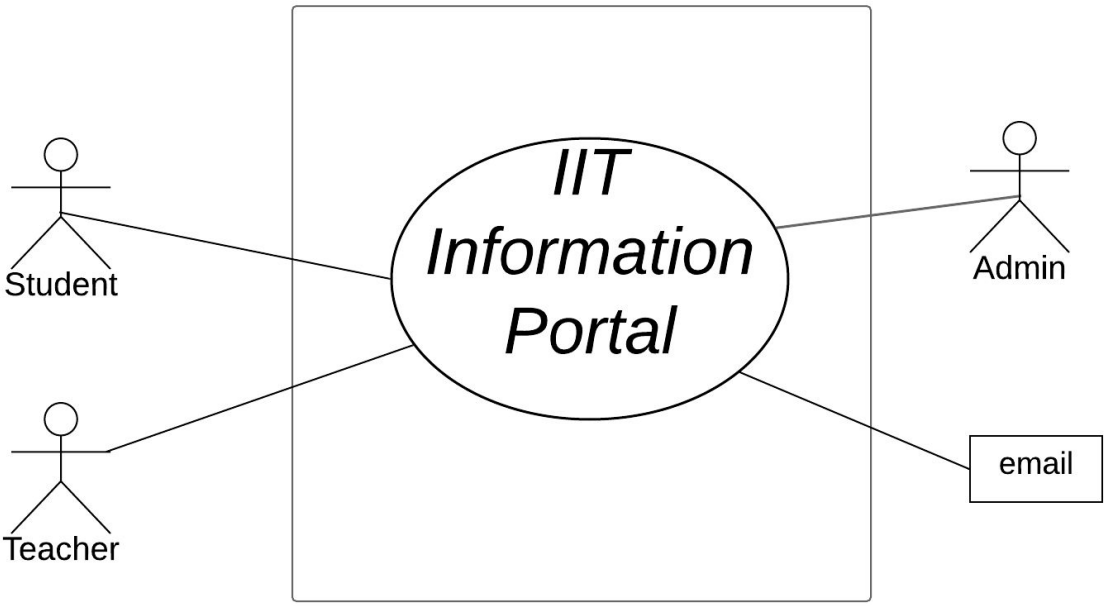
Primary actors interact directly to achieve required system function and derive the intended benefit from the system. They work directly and frequently with the software.

Secondary Actor

Secondary actors support the system so that primary actors can do their work.
They either produce or consume information.

Use Case diagrams give a non-technical view of the overall system.

primary actor: student, administrator, teacher
Secondary actor: email



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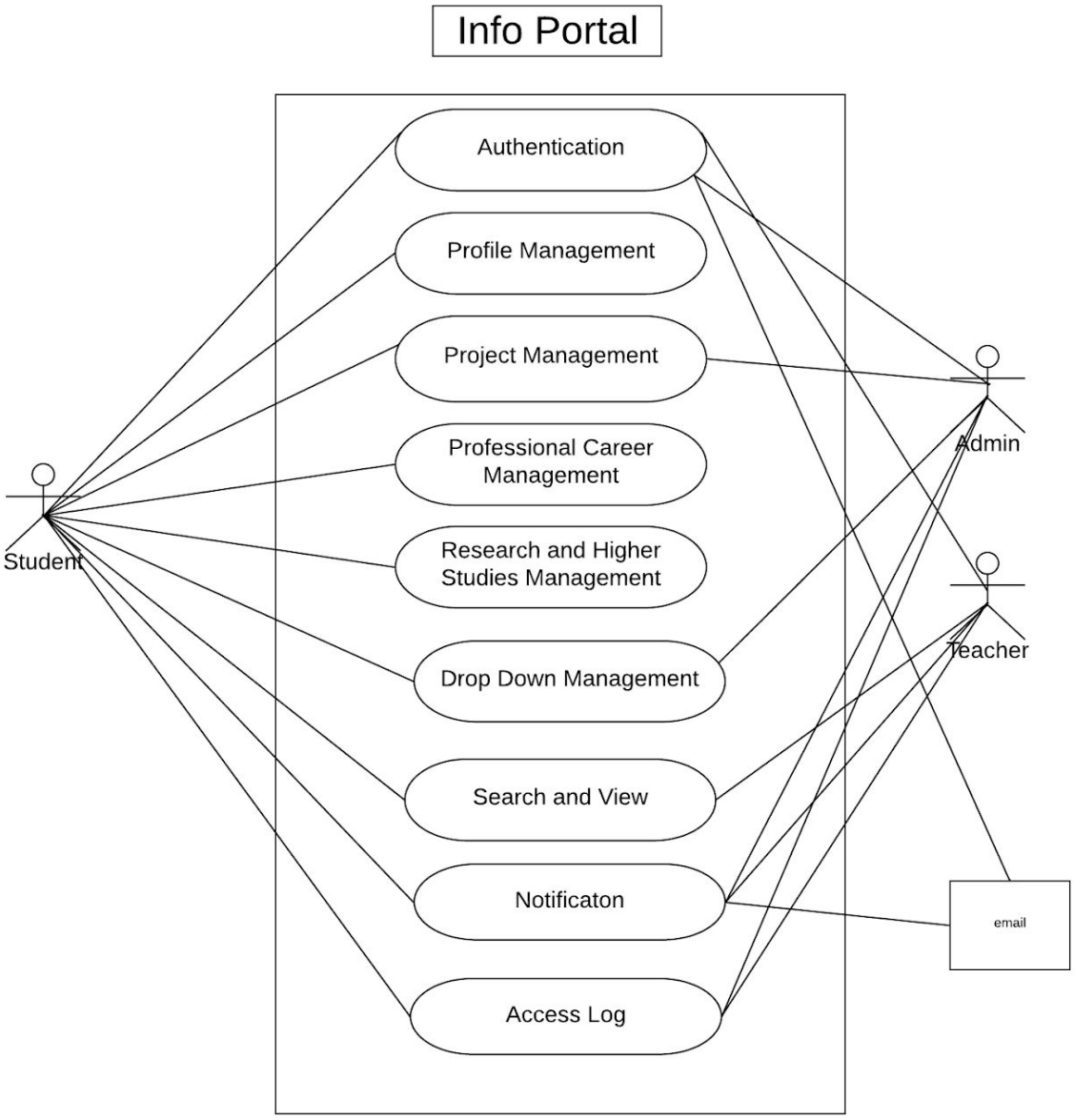
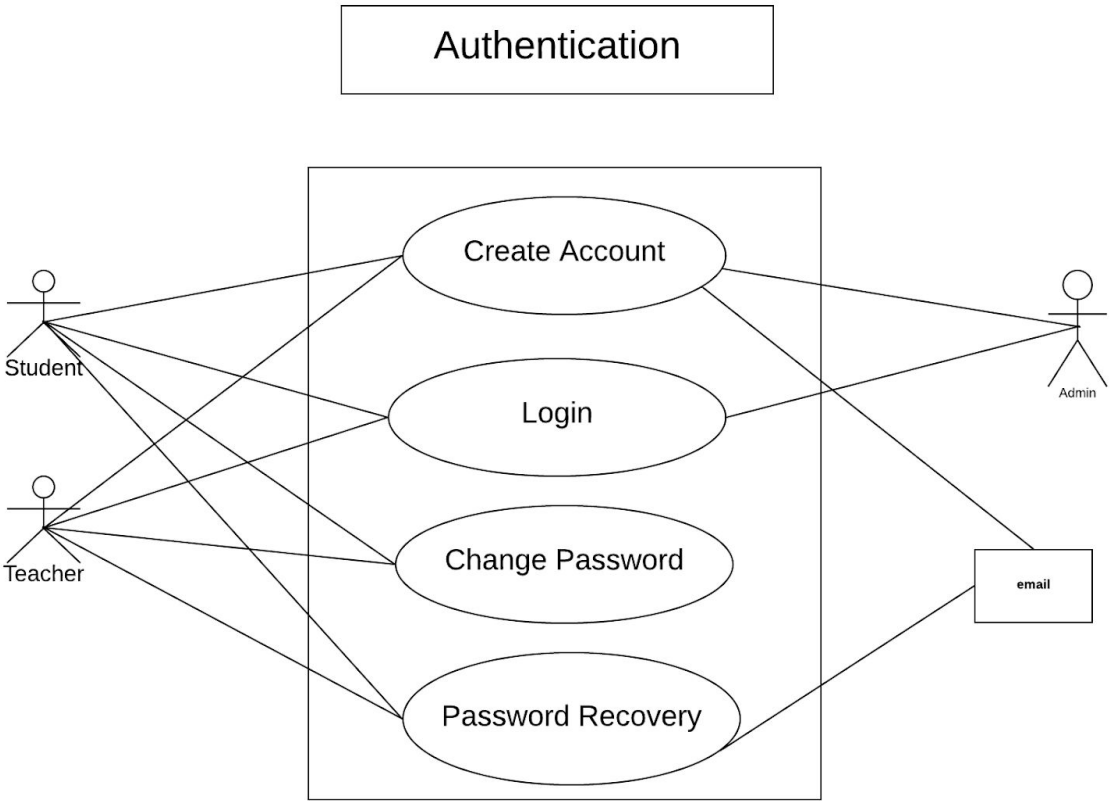
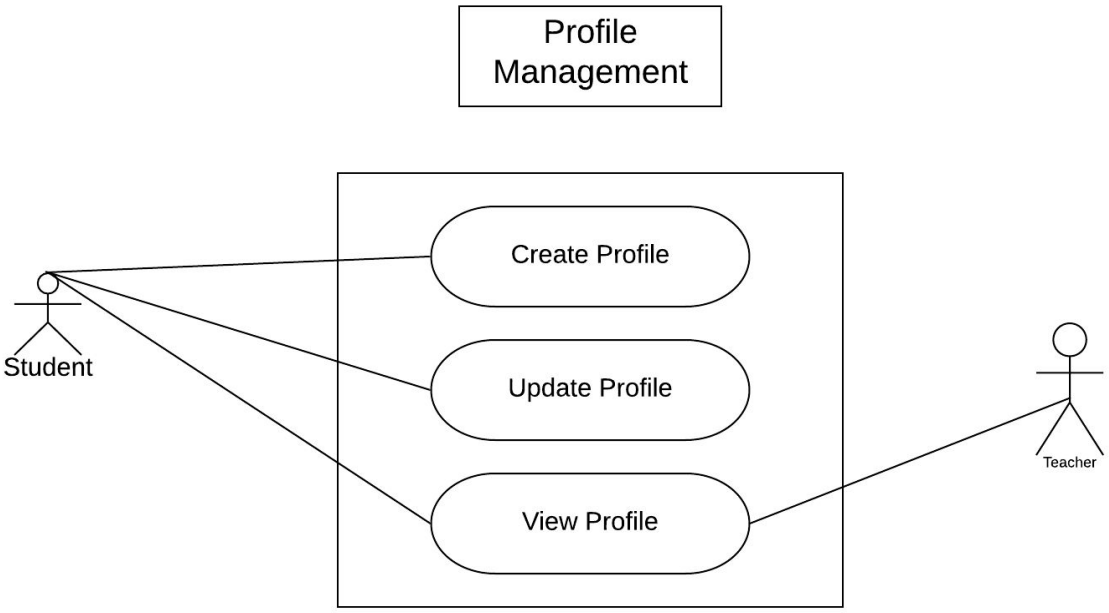

Info Portal
Authentication
Profile Management
Project Management
Professional Career Management
Research and Higher Studies Management
Drop Down Management
Search and View
Notificaton
Access Log
Student
Admin
Teacher
email

Level 1


Authentication
Create Account
Login
Change Password
Password Recovery
Student
Teacher
Admin
email

Level: 1.1



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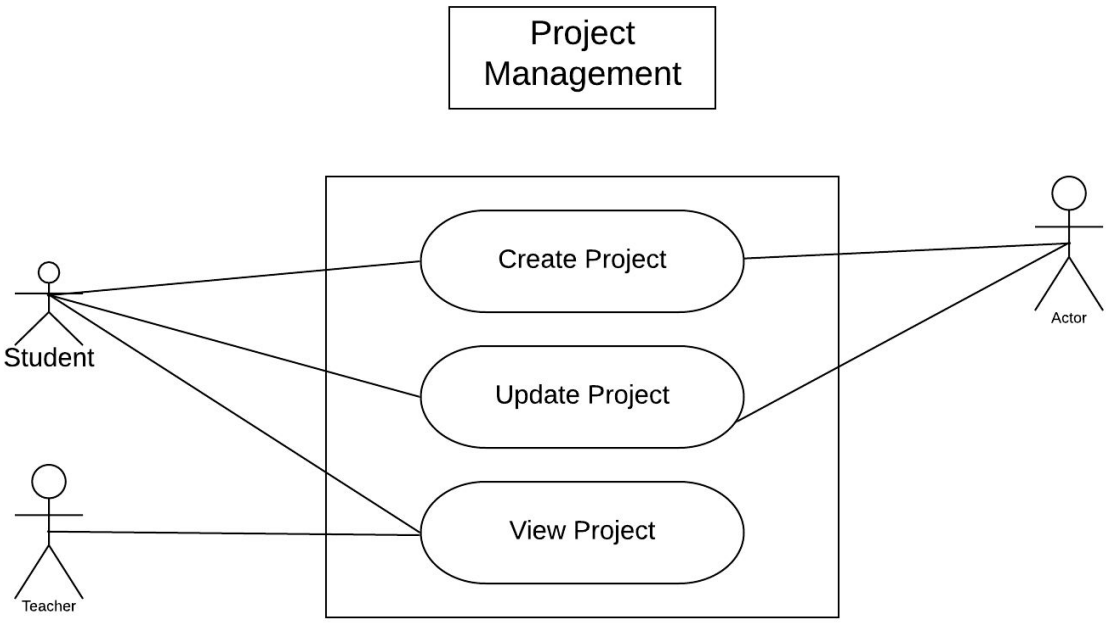

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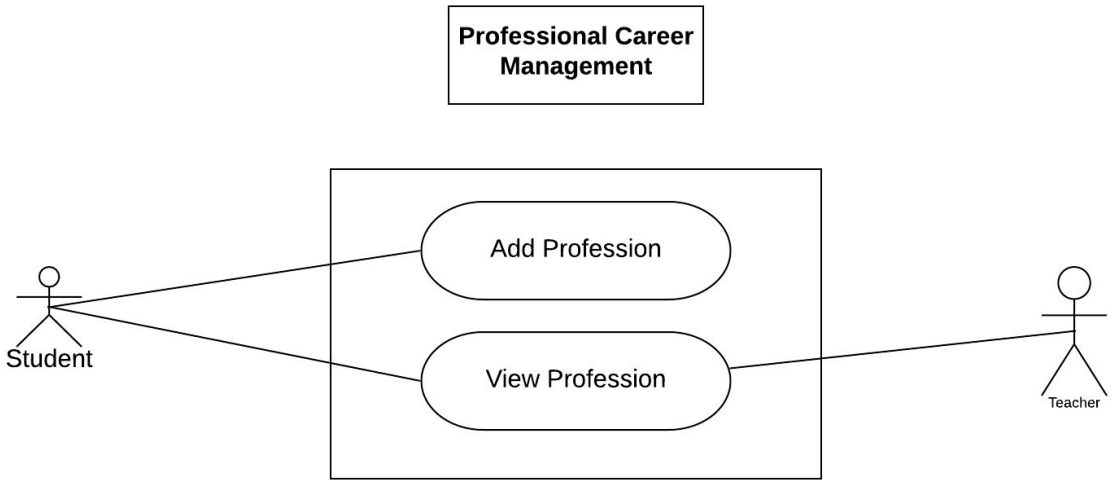

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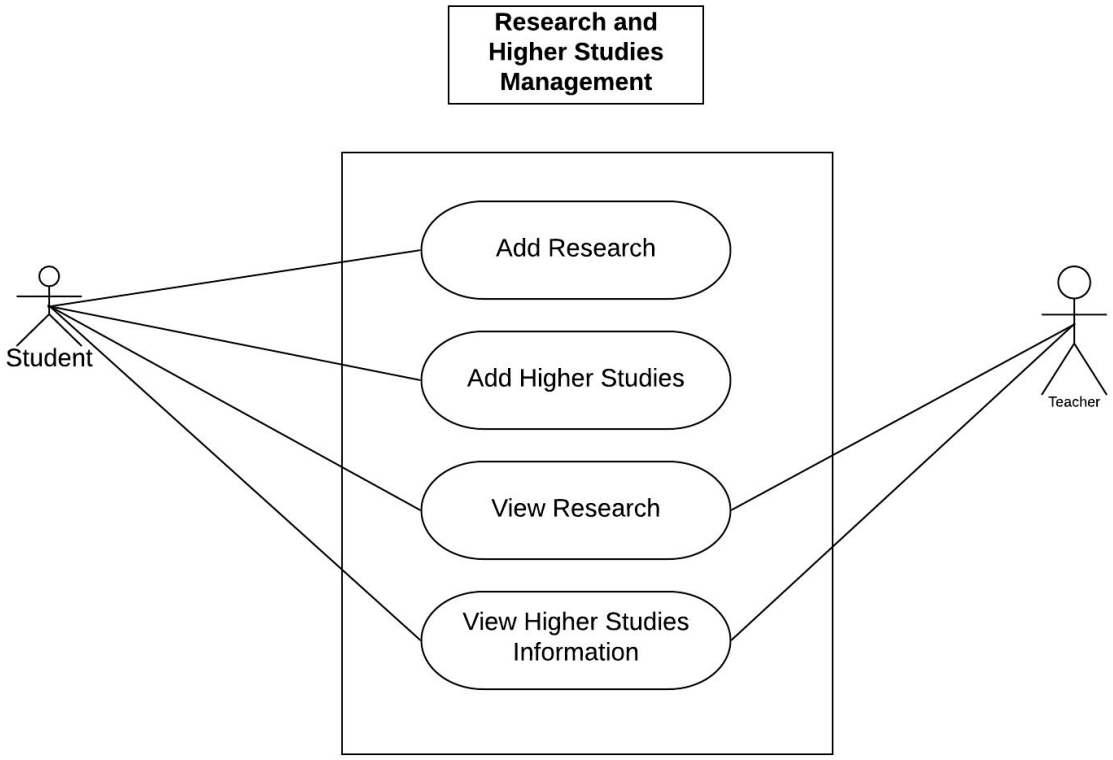

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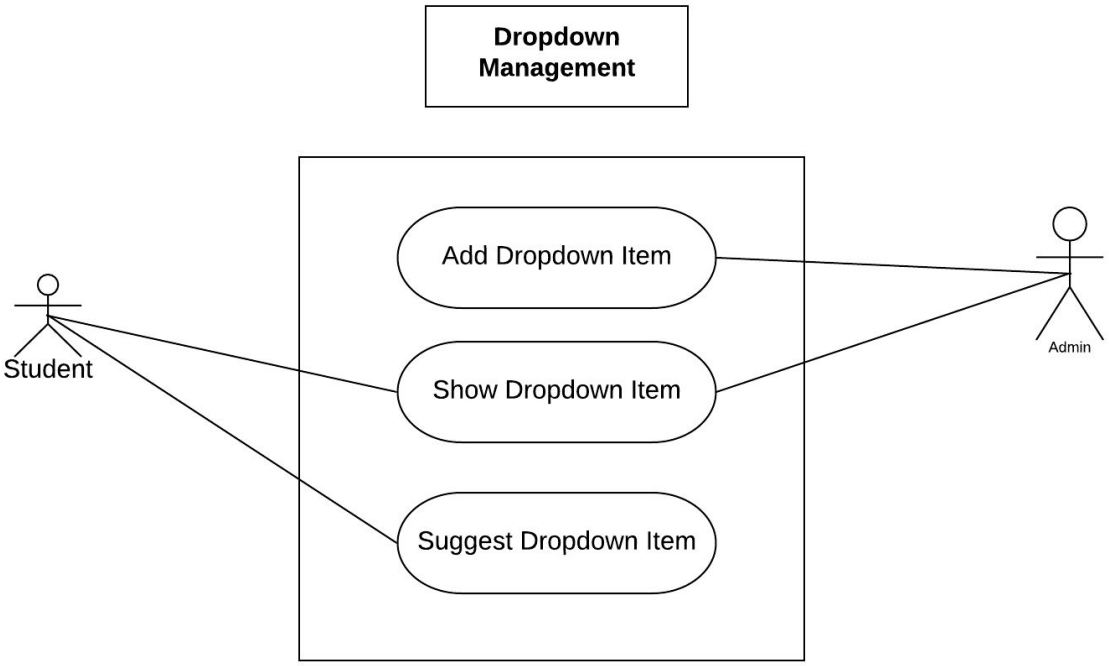
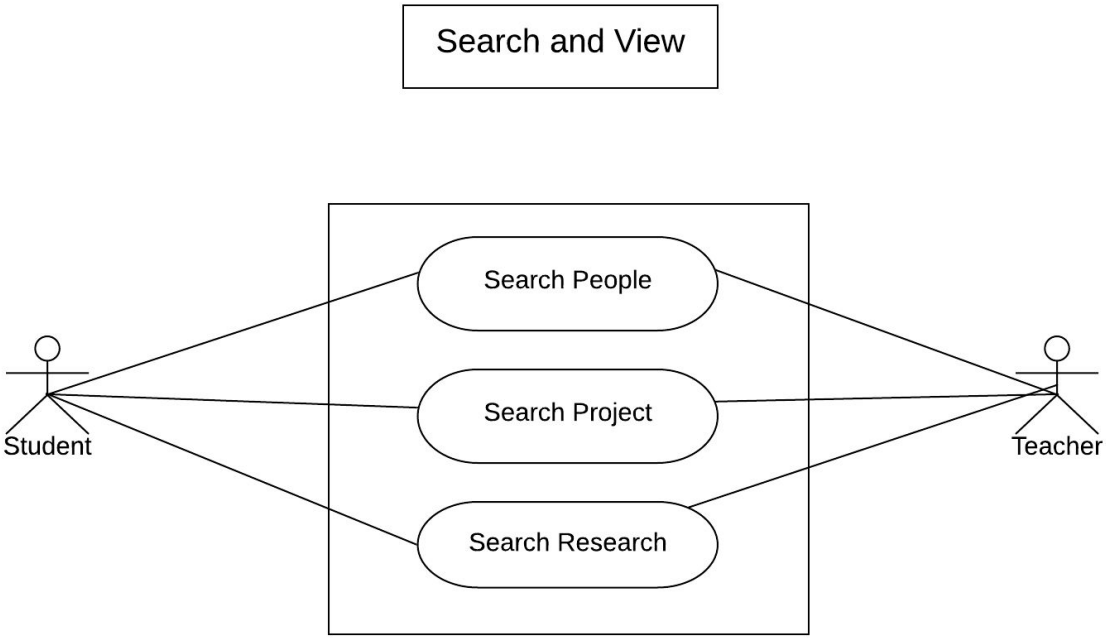

Dropdown Management
Add Dropdown Item
Show Dropdown Item
Suggest Dropdown Item
Student
Admin

Level: 1.6



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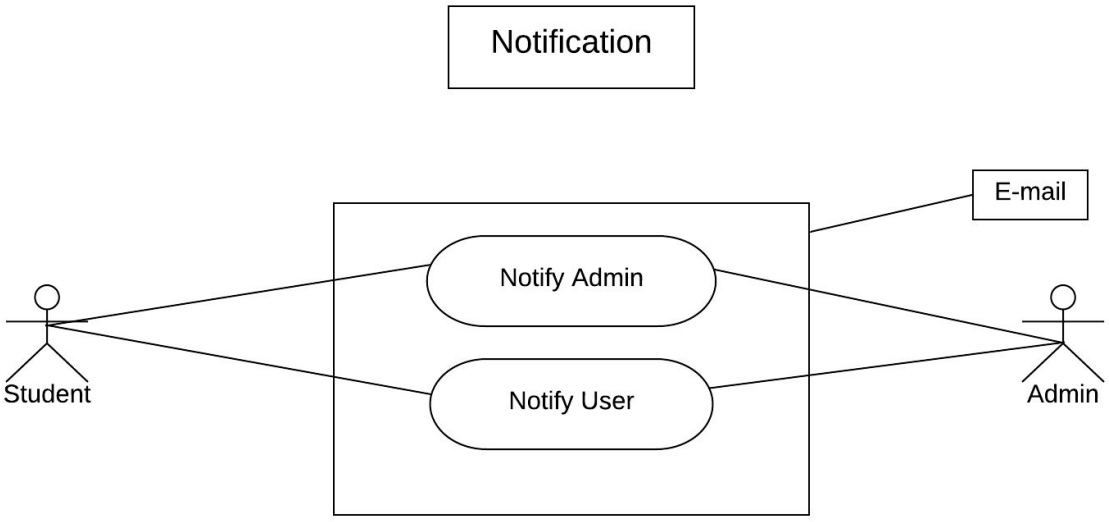
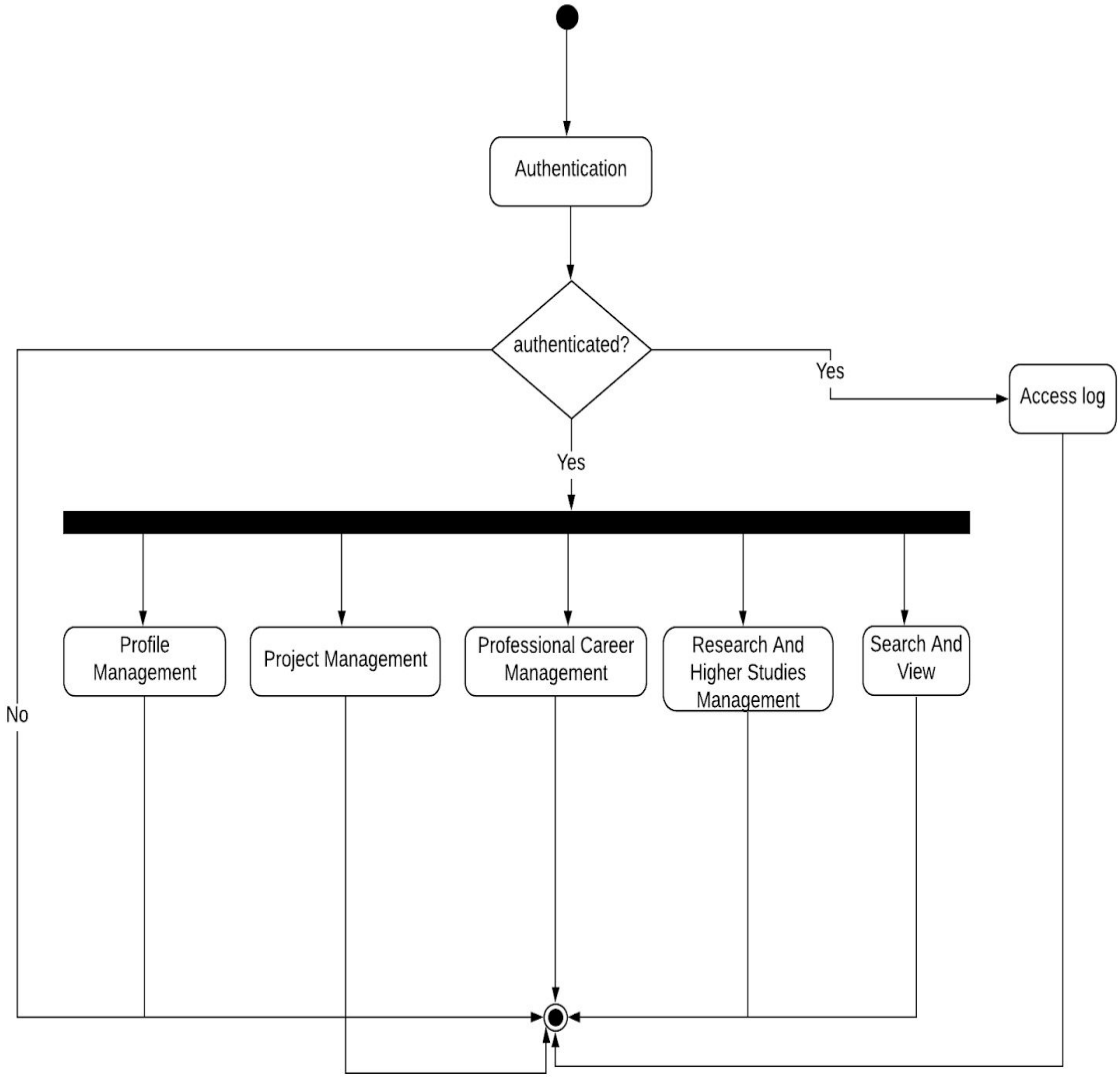


Level: 1.8

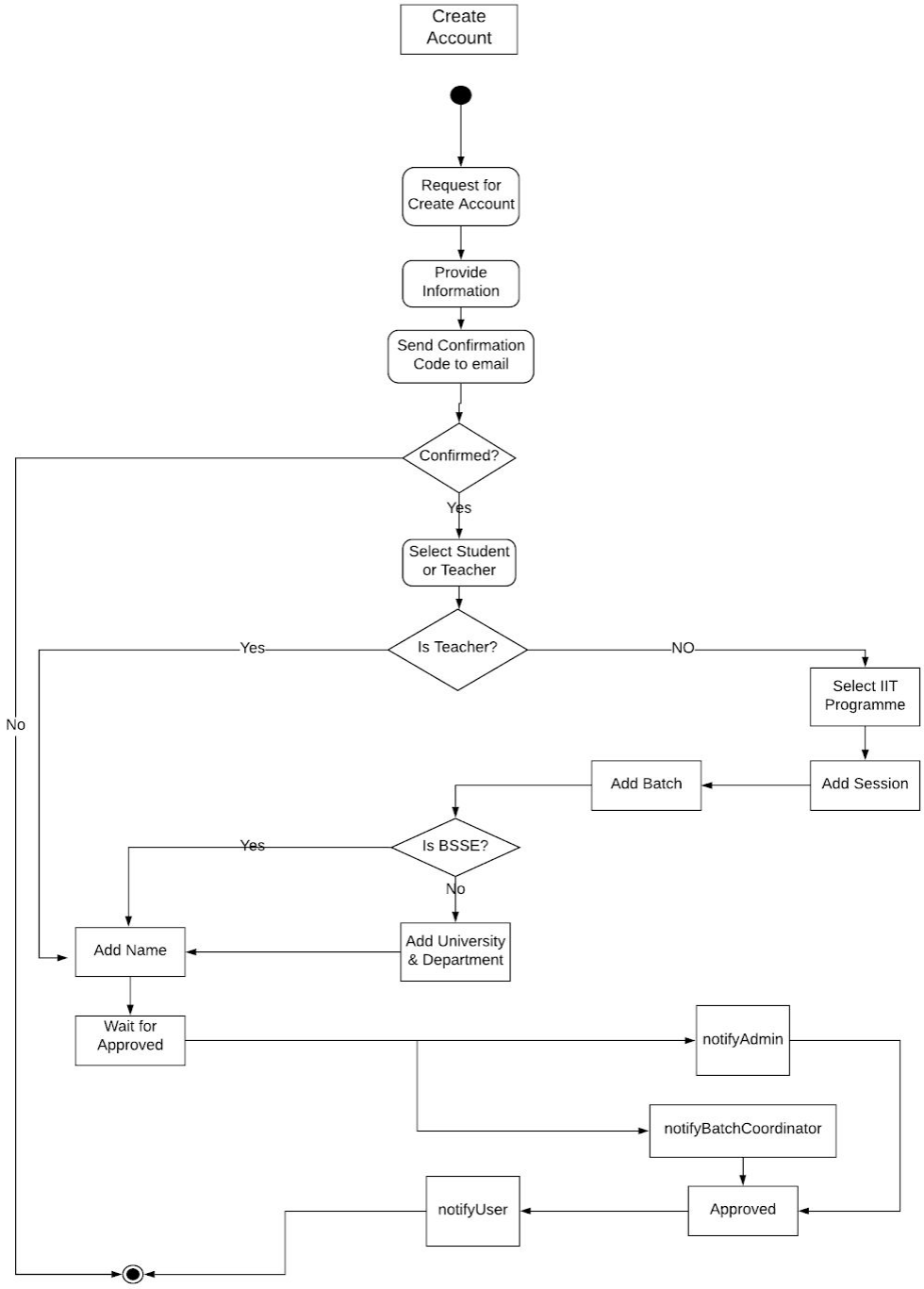
Activity Diagram

Definition of Activity Diagram

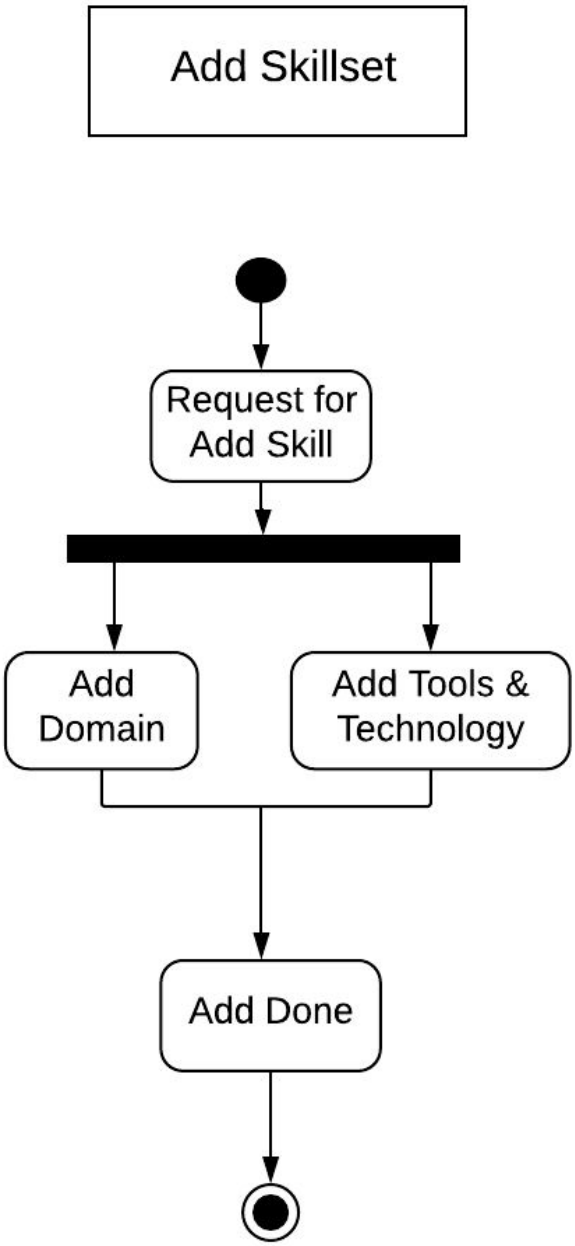
Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency.


Authentication
authenticated?
Yes
Access log
Yes
No
Profile Management
Project Management
Professional Career Management
Research And Higher Studies Management
Search And View

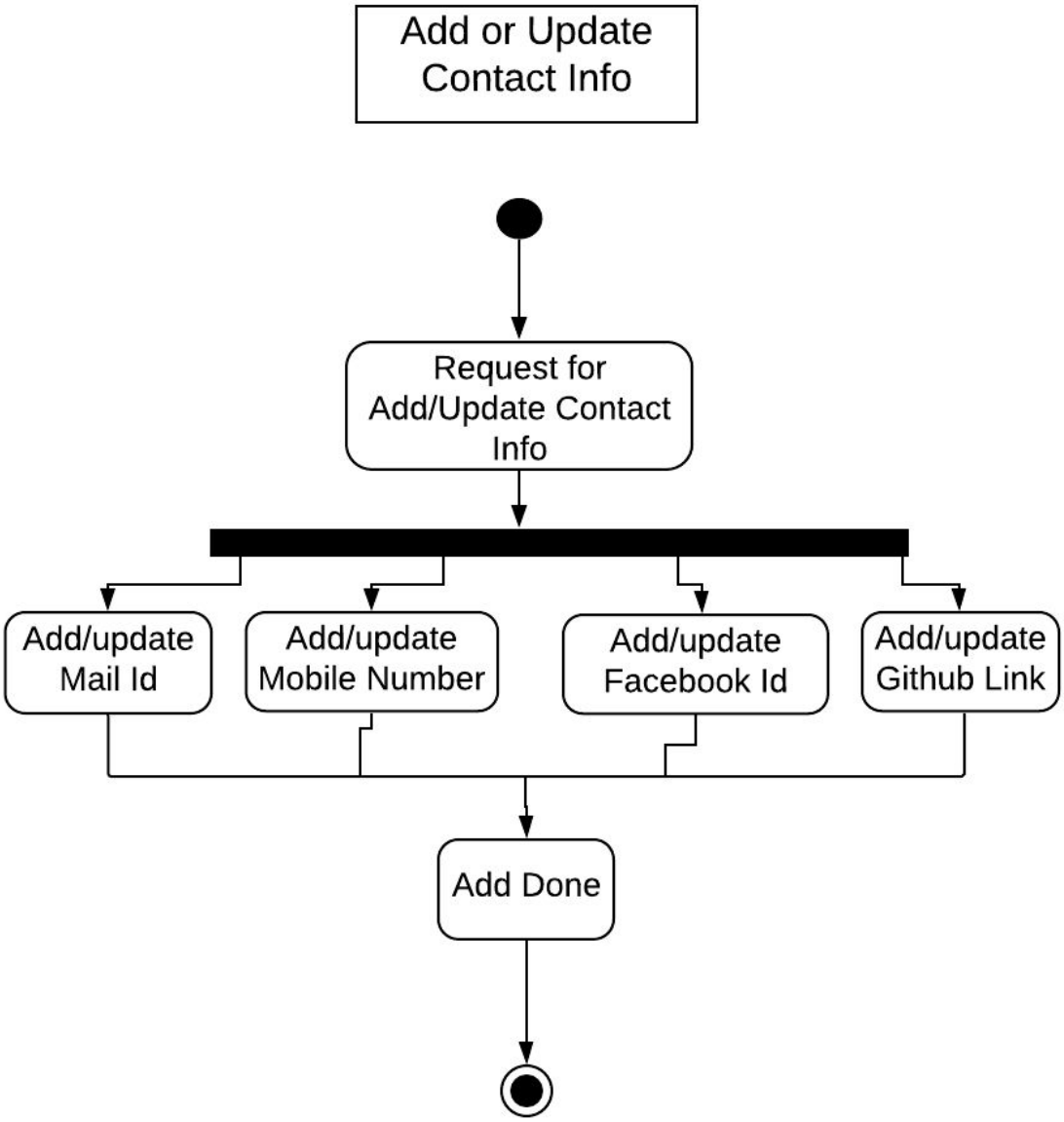
Level: 1


Create Account
Request for Create Account
Provide Information
Send Confirmation Code to email
Confirmed?
Yes
No
Select Student or Teacher
Is Teacher?
Yes
NO
Select IIT Programme
Add Session
Add Batch
Is BSSE?
Yes
No
Add University & Department
Add Name
Wait for Approved
notifyAdmin
notifyBatchCoordinator
Approved
notifyUser

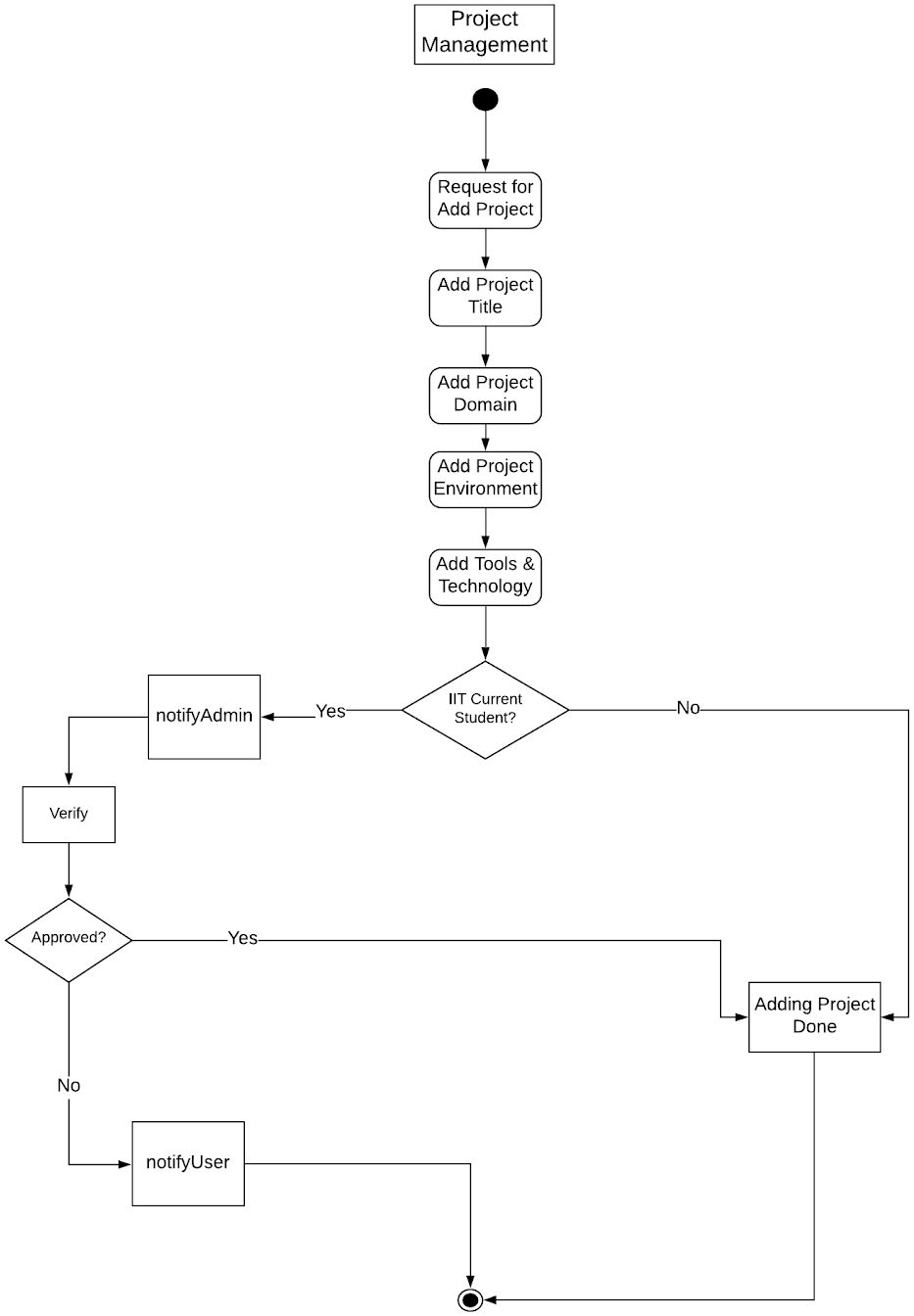
Level: 1.1.1


Add Skillset
Request for Add Skill
Add Domain
Add Tools & Technology
Add Done

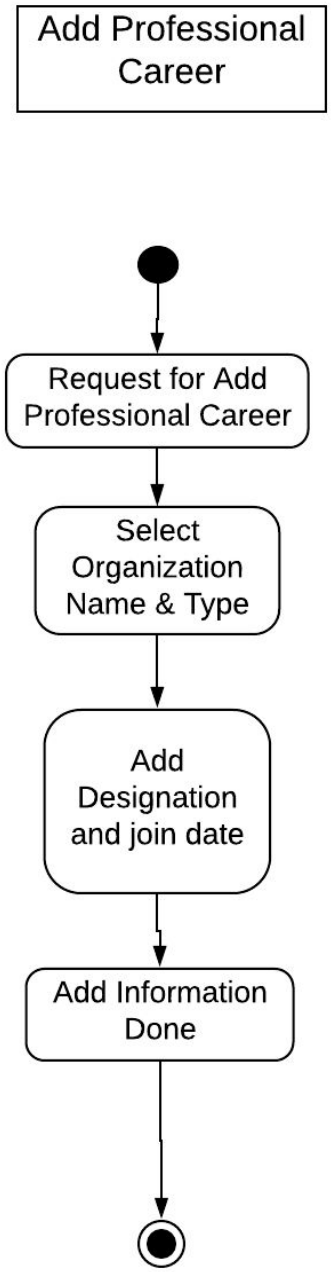
Level: 1.2.1


Add or Update Contact Info
Request for Add/Update Contact Info
Add/update Mail Id
Add/update Mobile Number
Add/update Facebook Id
Add/update Github Link
Add Done

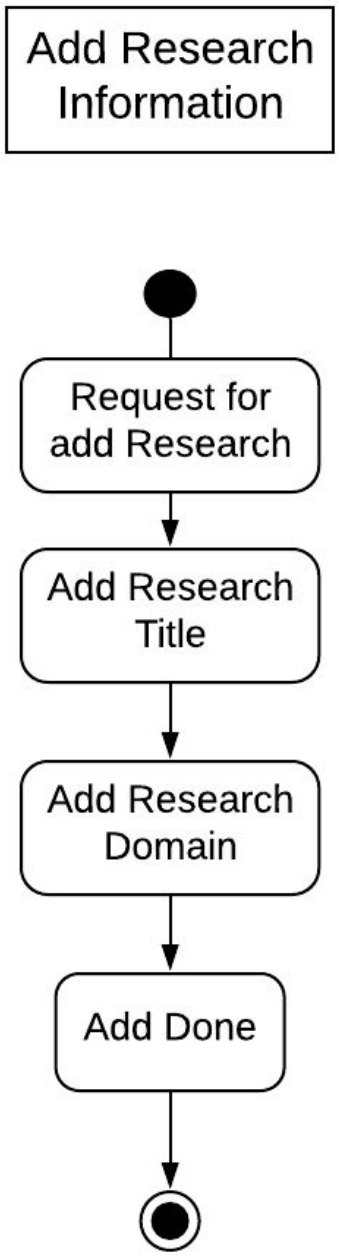
Level: 1.2.2


Project Management
Request for Add Project
Add Project Title
Add Project Domain
Add Project Environment
Add Tools & Technology
IIT Current Student?
Yes
No
notifyAdmin
Verify
Approved?
Yes
No
notifyUser
Adding Project Done

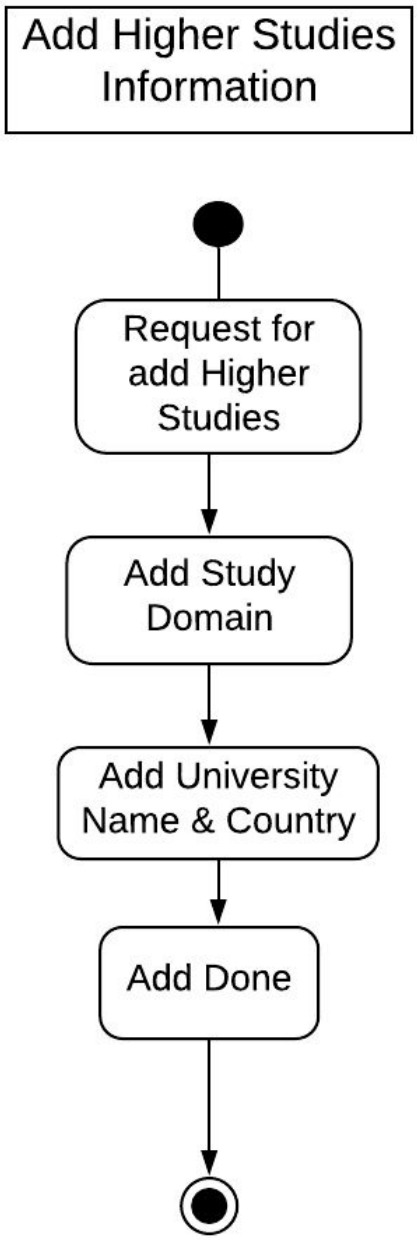
Level: 1.3


Add Professional Career
Request for Add Professional Career
Select Organization Name & Type
Add Designation and join date
Add Information Done

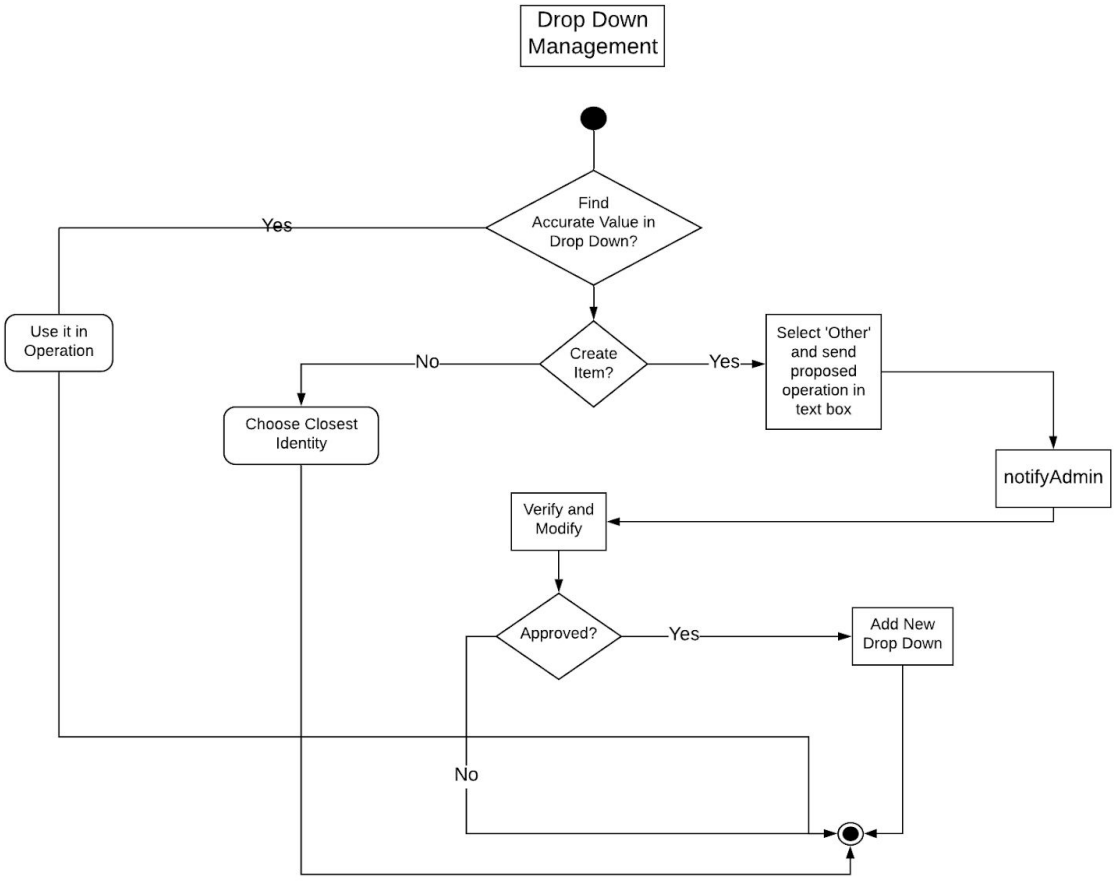
Level: 1.4


Add Research Information
Request for add Research
Add Research Title
Add Research Domain
Add Done

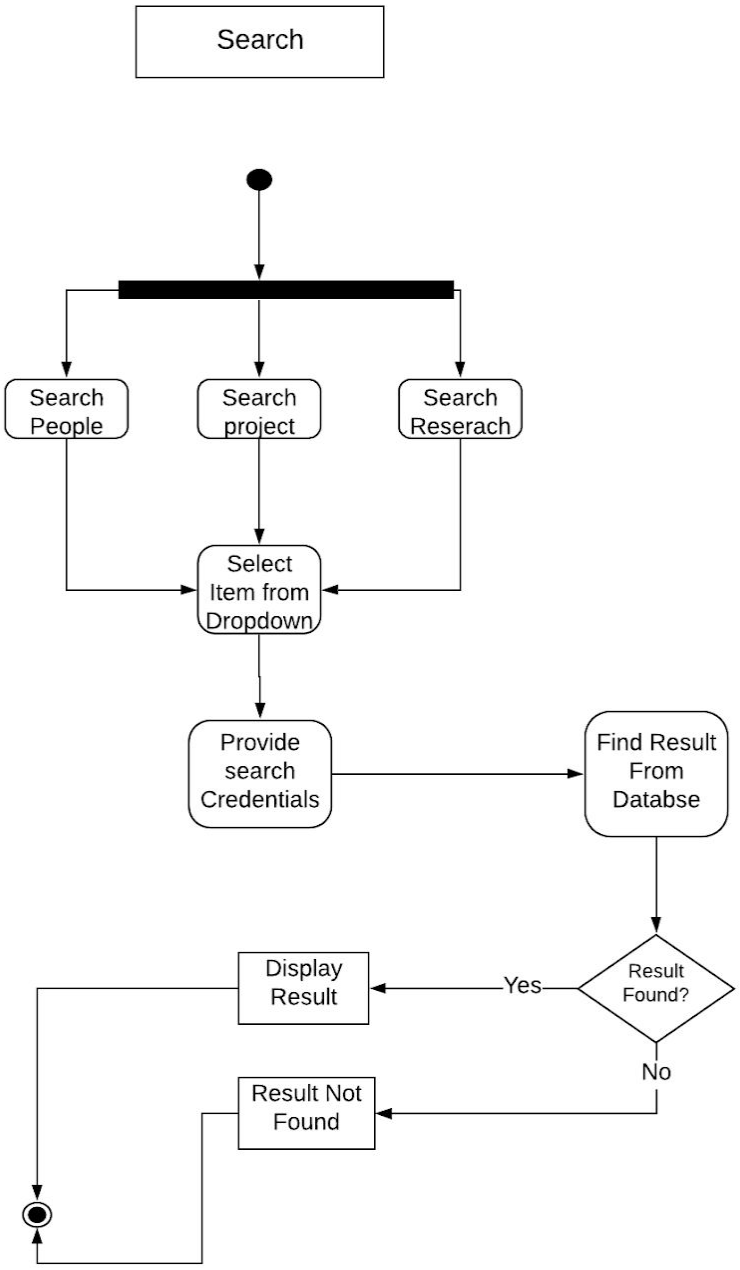
Level: 1.5.1


Add Higher Studies Information
Request for add Higher Studies
Add Study Domain
Add University Name & Country
Add Done

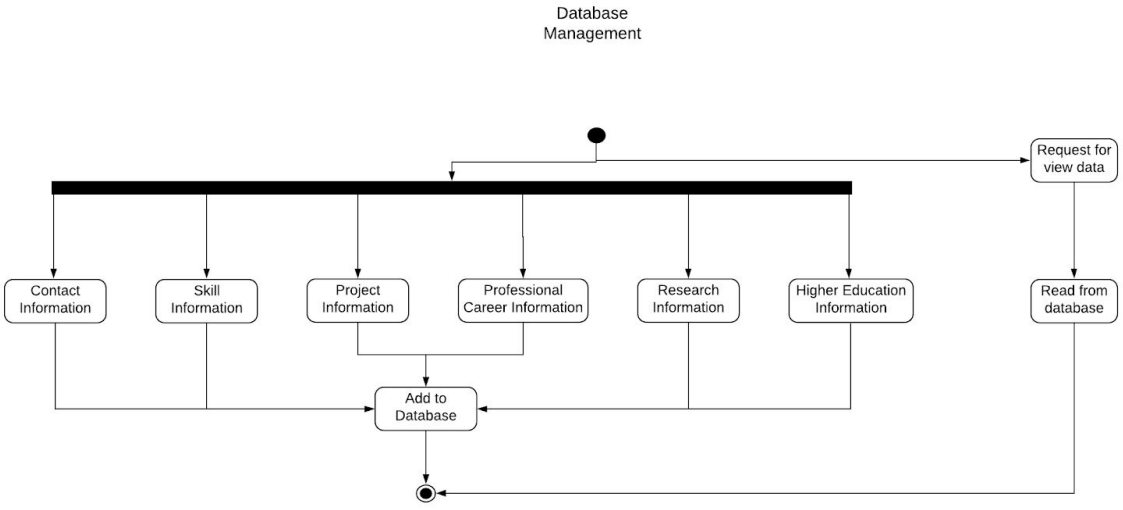
Level: 1.5.2


Drop Down Management
Find Accurate Value in Drop Down?
Yes
Use it in Operation
Create Item?
No
Yes
Choose Closest Identity
Select 'Other' and send proposed operation in text box
notifyAdmin
Verify and Modify
Approved?
Yes
Add New Drop Down
No

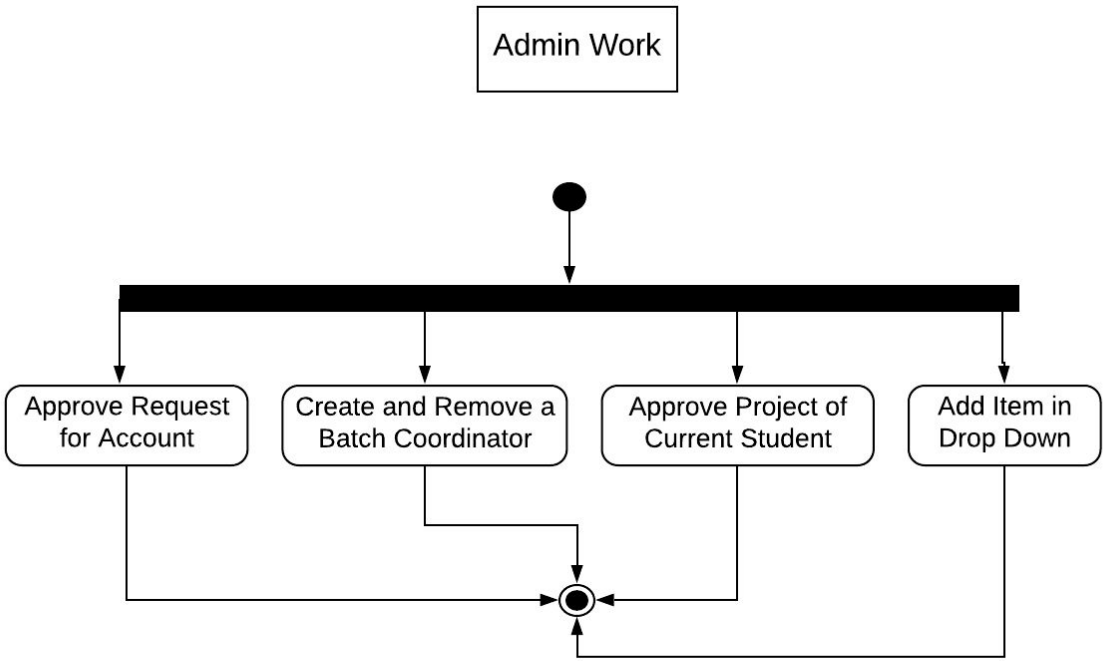
Level: 1.6


Search
Search People
Search project
Search Reserach
Select Item from Dropdown
Provide search Credentials
Find Result From Databse
Result Found?
Yes
Display Result
No
Result Not Found

Level: 1.7



Level: 1.8

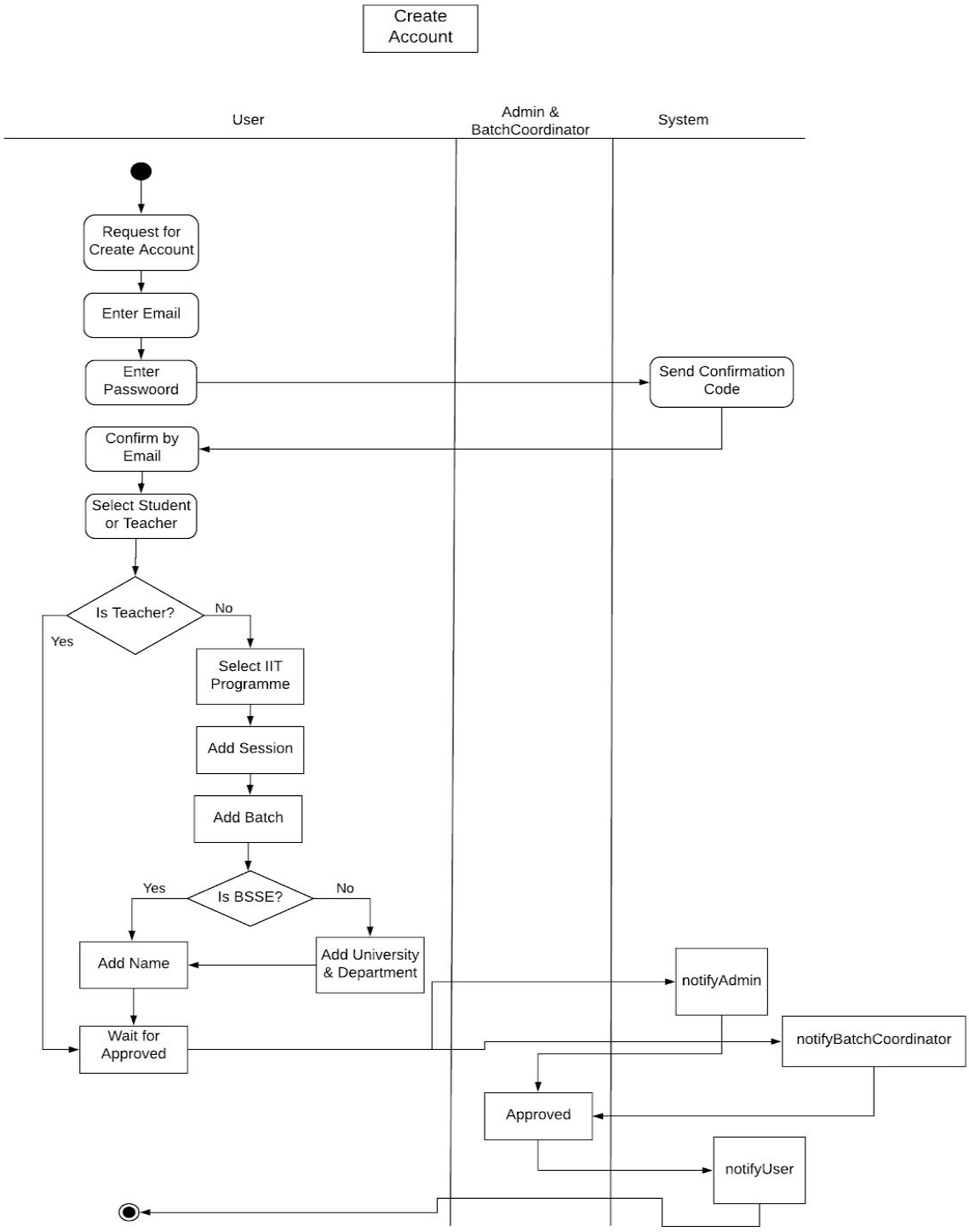


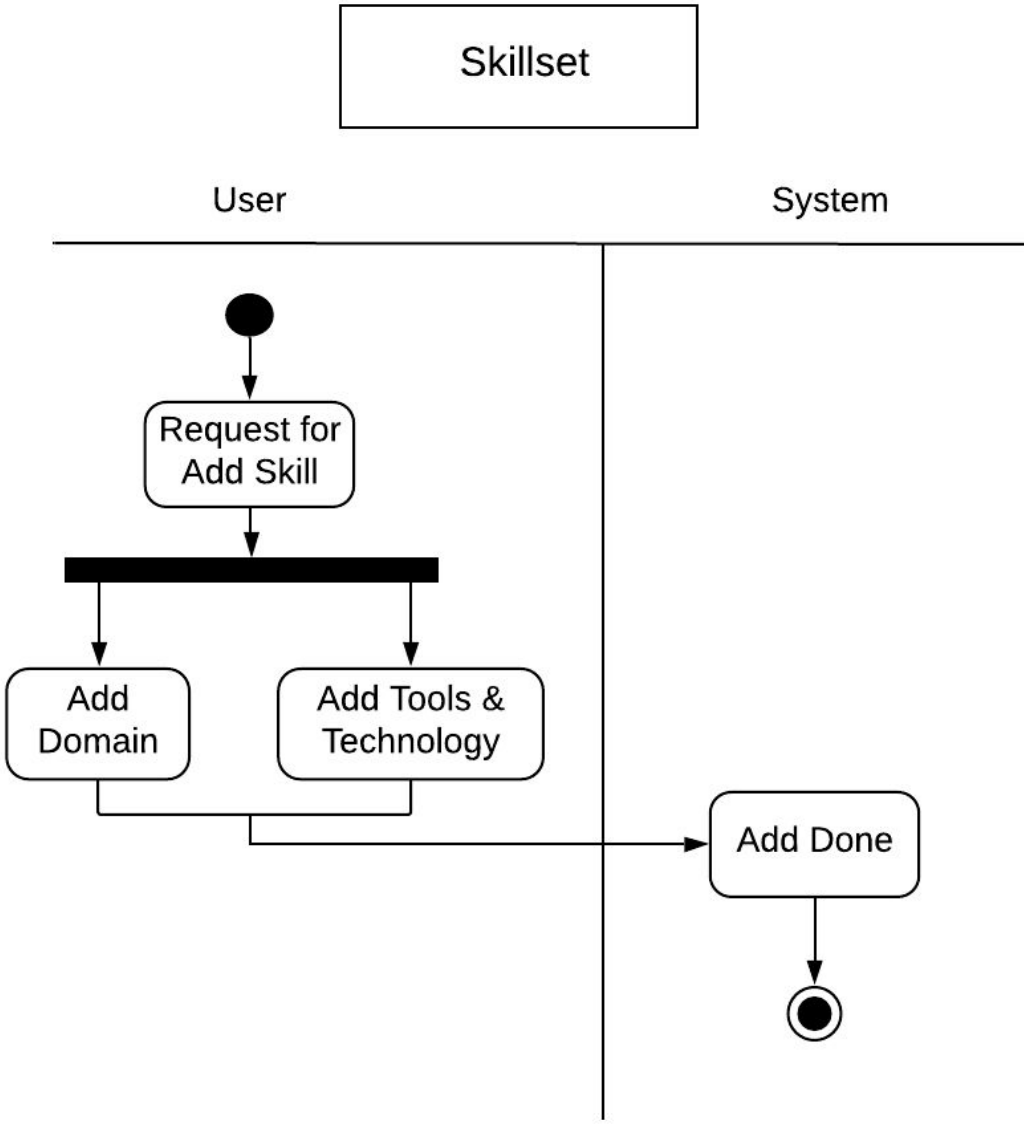
Level: 1.9

Swimlane Diagram

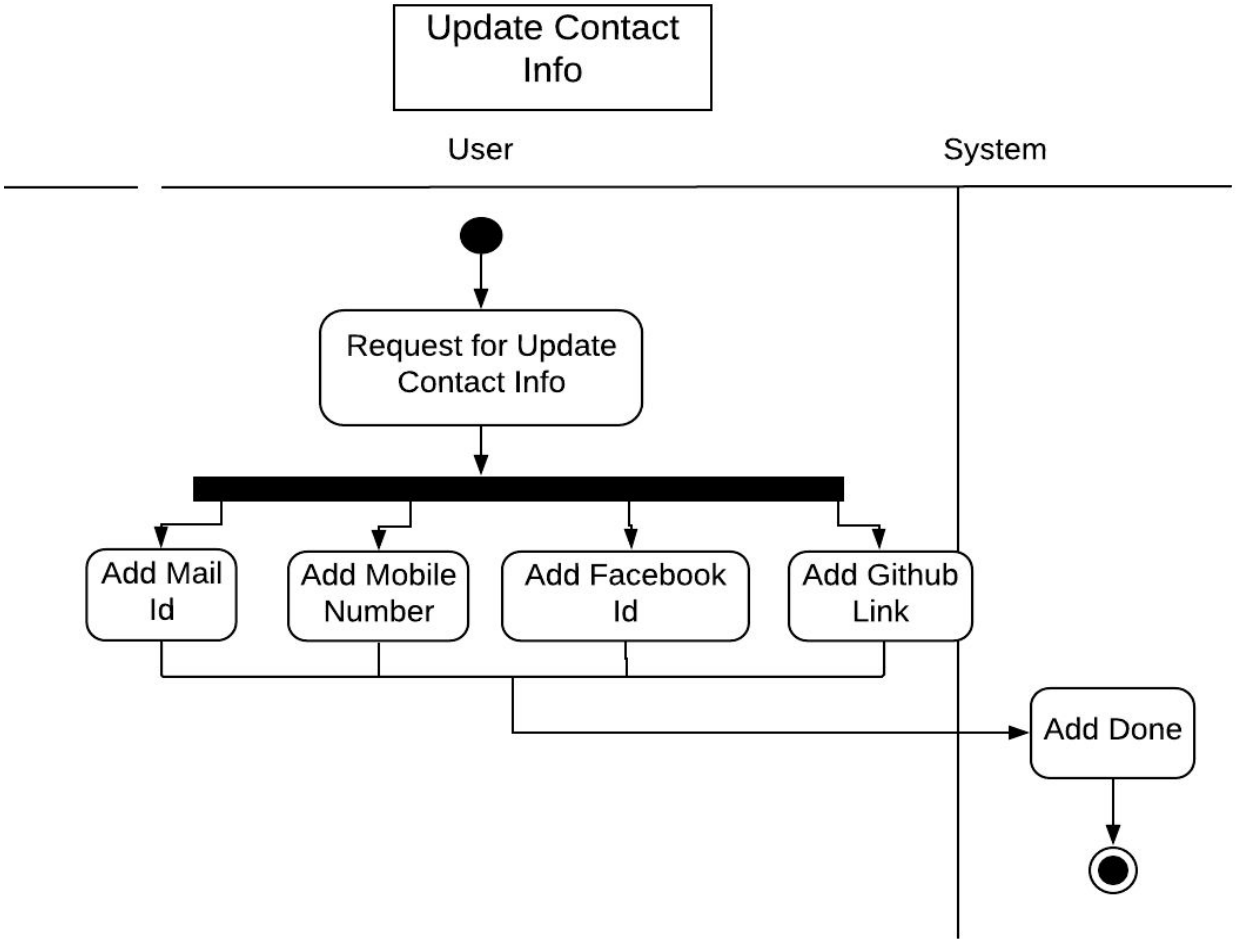
Definition :

A swimlane diagram is a type of flowchart that delineates who does what in a process. Using the metaphor of lanes in a pool, a swimlane diagram provides clarity and accountability by placing process steps within the horizontal or vertical “swimlanes” of a particular employee, work group or department. It shows connections, communication and handoffs between these lanes, and it can serve to highlight waste, redundancy and inefficiency in a process.

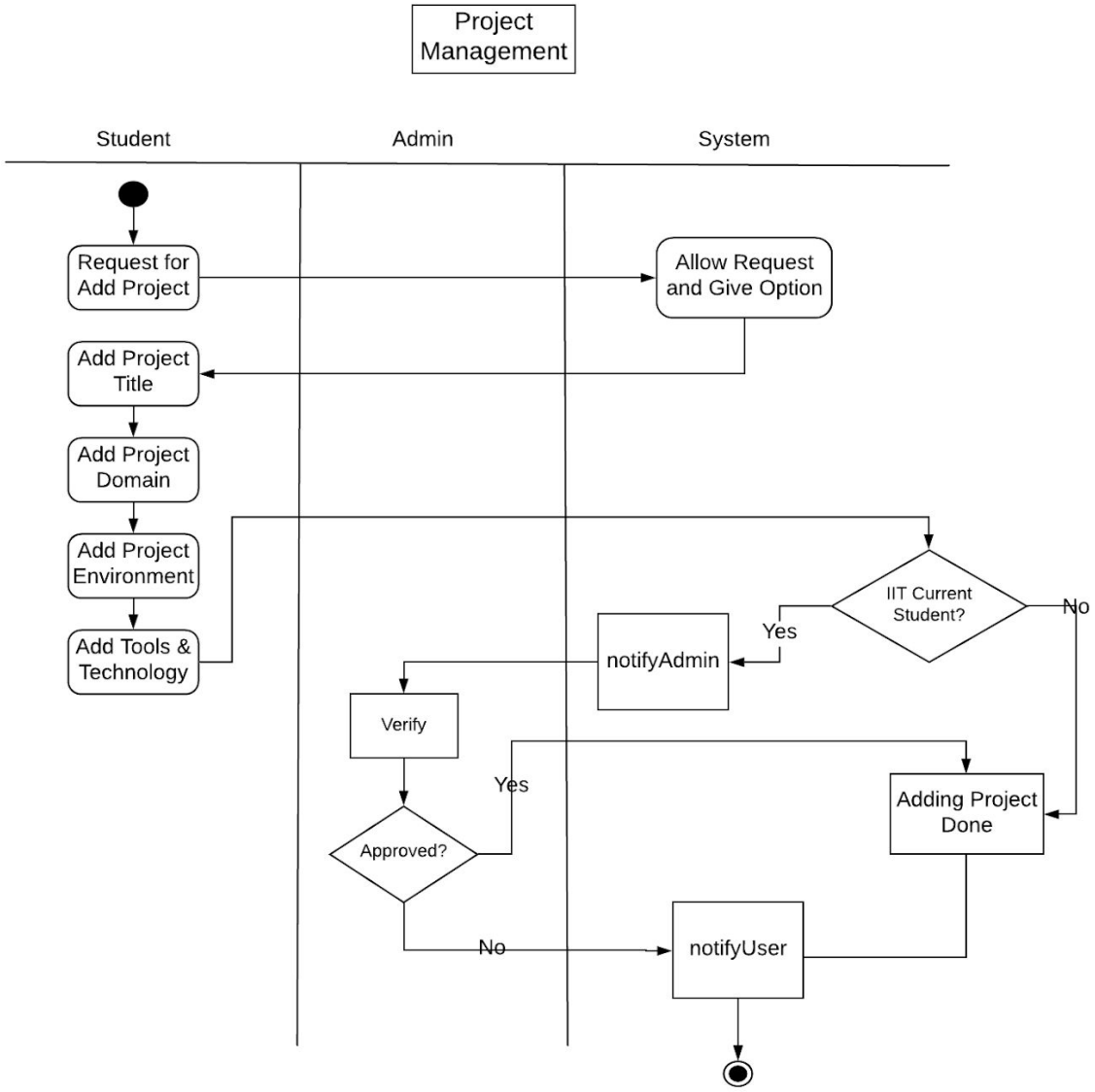

Create Account
User
Admin & BatchCoordinator
System
Request for Create Account
Enter Email
Enter Passwoord
Send Confirmation Code
Confirm by Email
Select Student or Teacher
Is Teacher?
No
Yes
Select IIT Programme
Add Session
Add Batch
Yes
Is BSSE?
No
Add Name
Add University & Department
notifyAdmin
Wait for Approved
notifyBatchCoordinator
Approved
notifyUser


Skillset
User
System
Request for Add Skill
Add Domain
Add Tools & Technology
Add Done

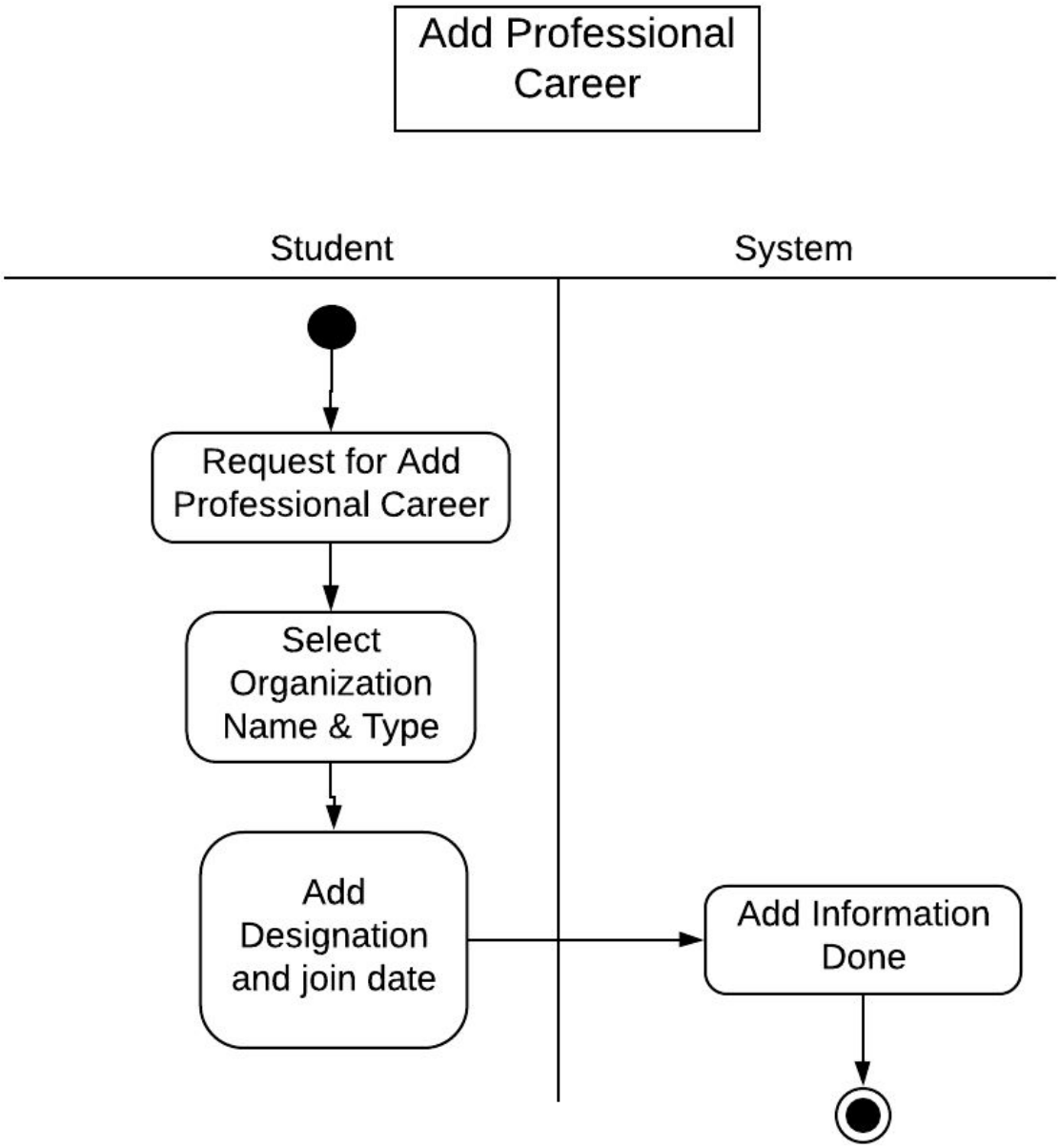
Level: 1.2.1


Update Contact Info
User
System
Request for Update Contact Info
Add Mail Id
Add Mobile Number
Add Facebook Id
Add Github Link
Add Done

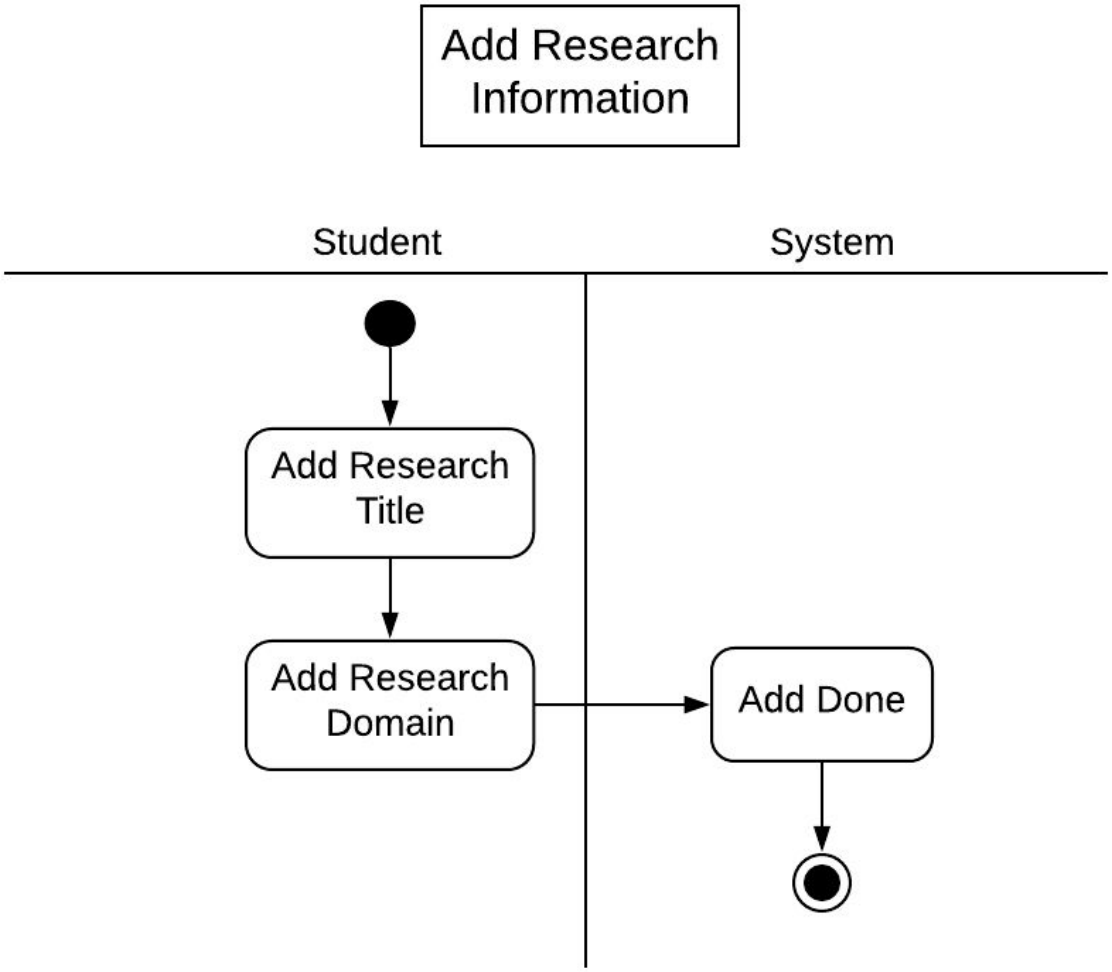
Level: 1.2.2


Project Management
Student
Admin
System
Request for Add Project
Allow Request and Give Option
Add Project Title
Add Project Domain
Add Project Environment
Add Tools & Technology
IIT Current Student?
Yes
No
notifyAdmin
Verify
Yes
Approved?
Adding Project Done
No
notifyUser

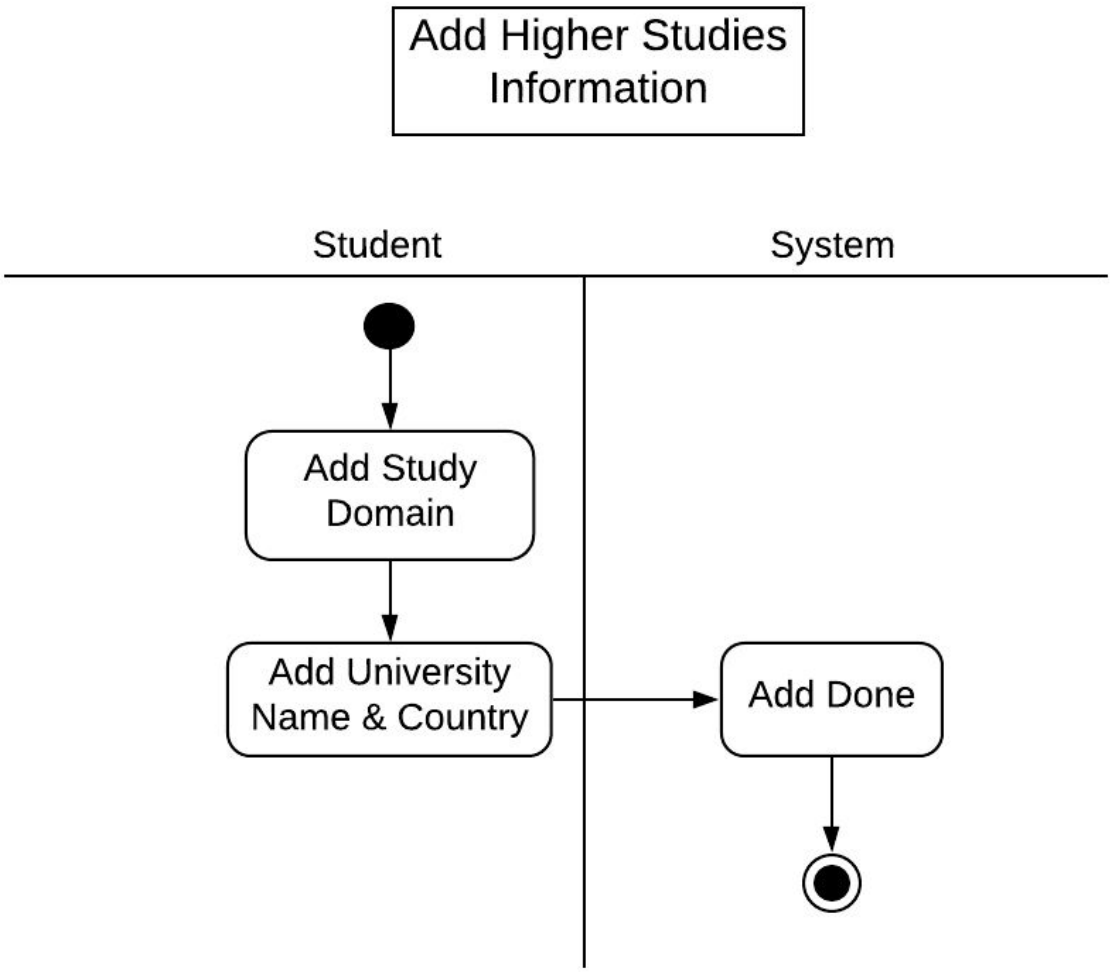
Level: 1.3


Add Professional Career
Student
System
Request for Add Professional Career
Select Organization Name & Type
Add Designation and join date
Add Information Done

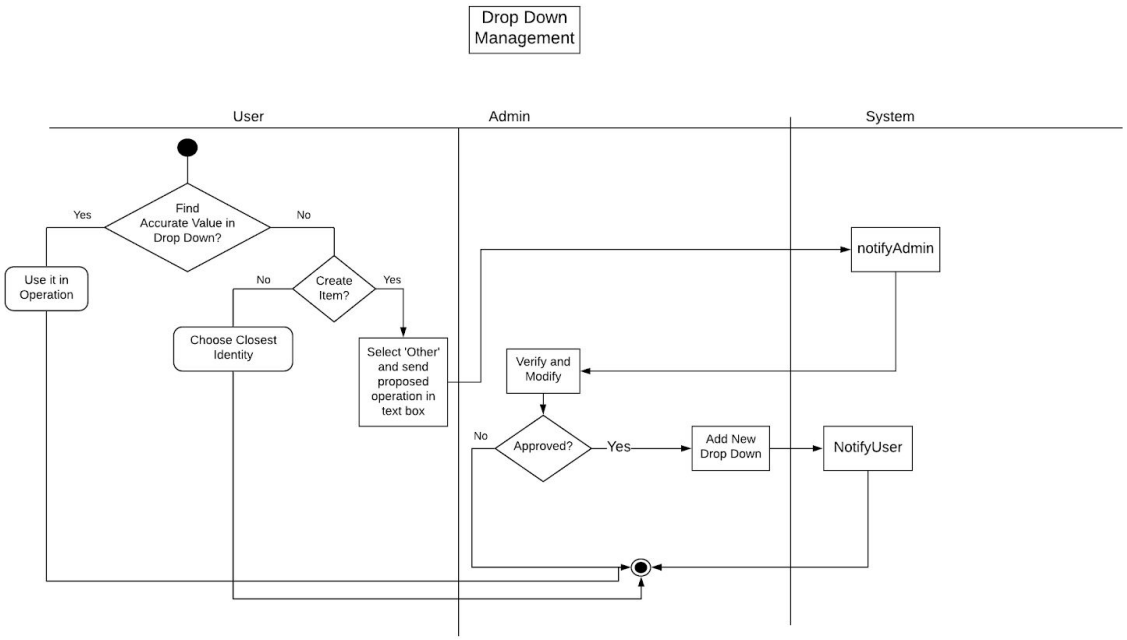
Level: 1.4


Add Research Information
Student
System
Add Research Title
Add Research Domain
Add Done

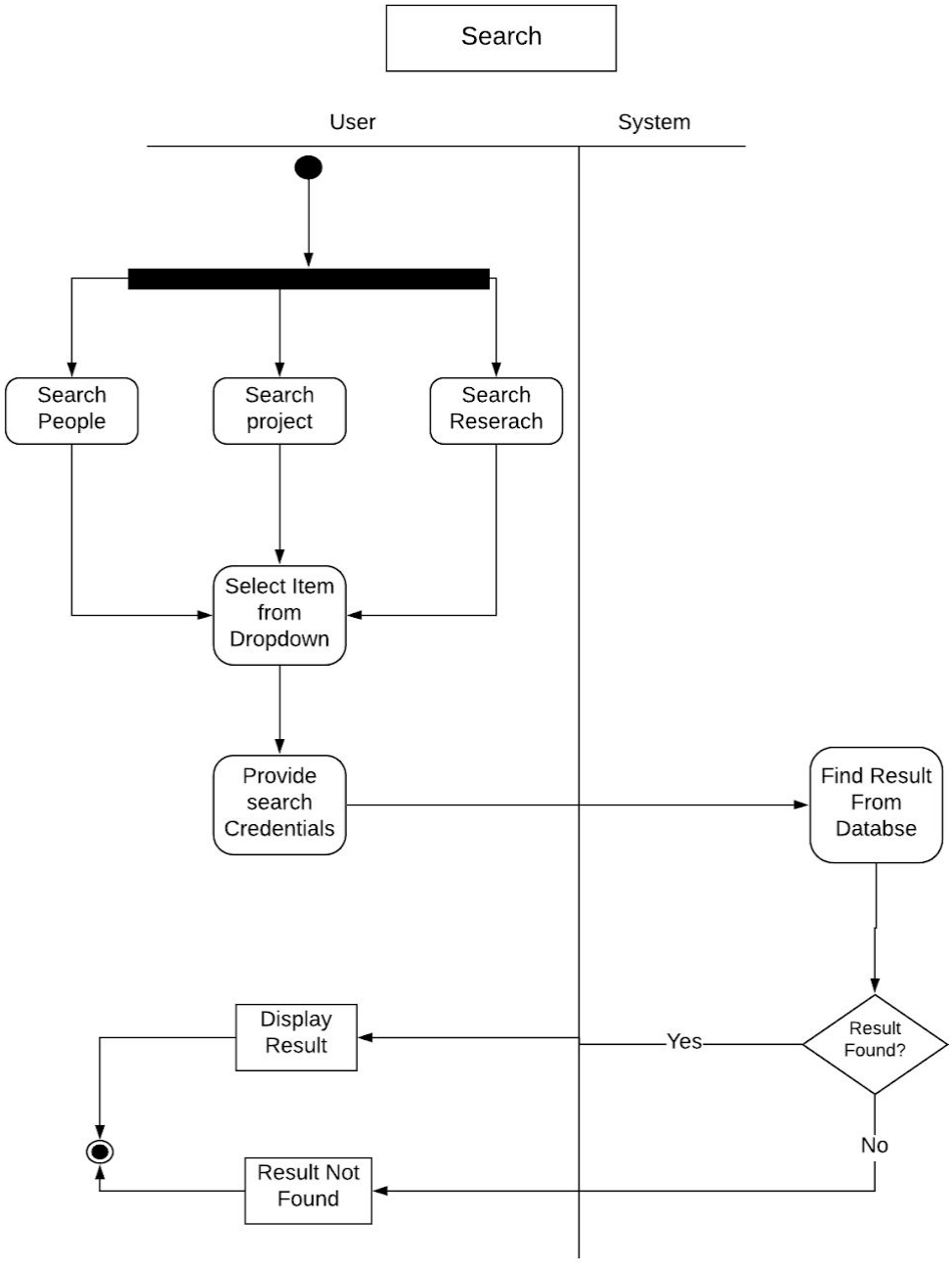
Level: 1.5.1


Add Higher Studies Information
Student
System
Add Study Domain
Add University Name & Country
Add Done

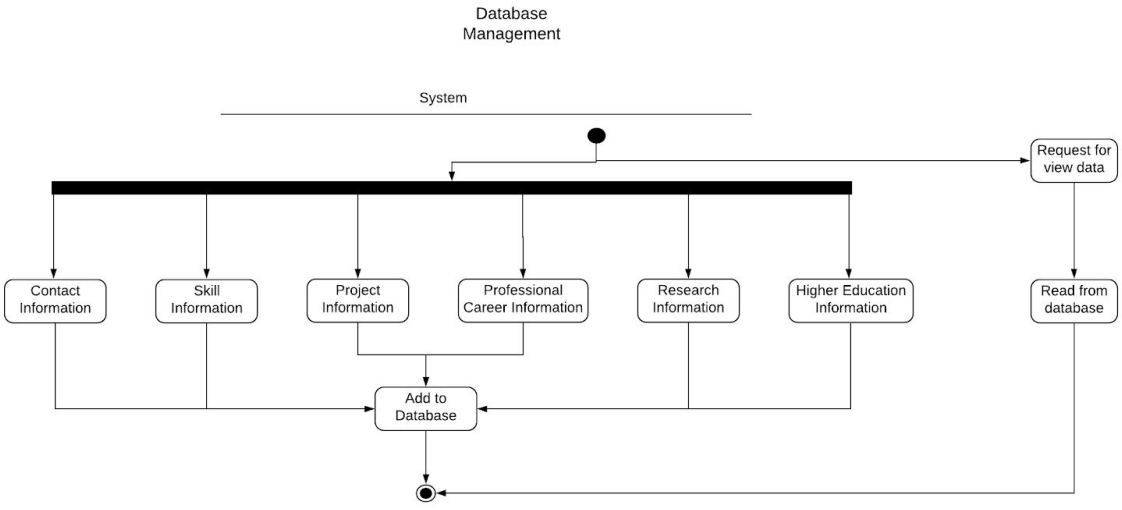
Level: 1.5.2


Drop Down Management
User
Admin
System
Find Accurate Value in Drop Down?
Yes
No
Use it in Operation
Create Item?
No
Yes
Choose Closest Identity
Select 'Other' and send proposed operation in text box
notifyAdmin
Verify and Modify
No
Approved?
Yes
Add New Drop Down
NotifyUser

Level: 1.6

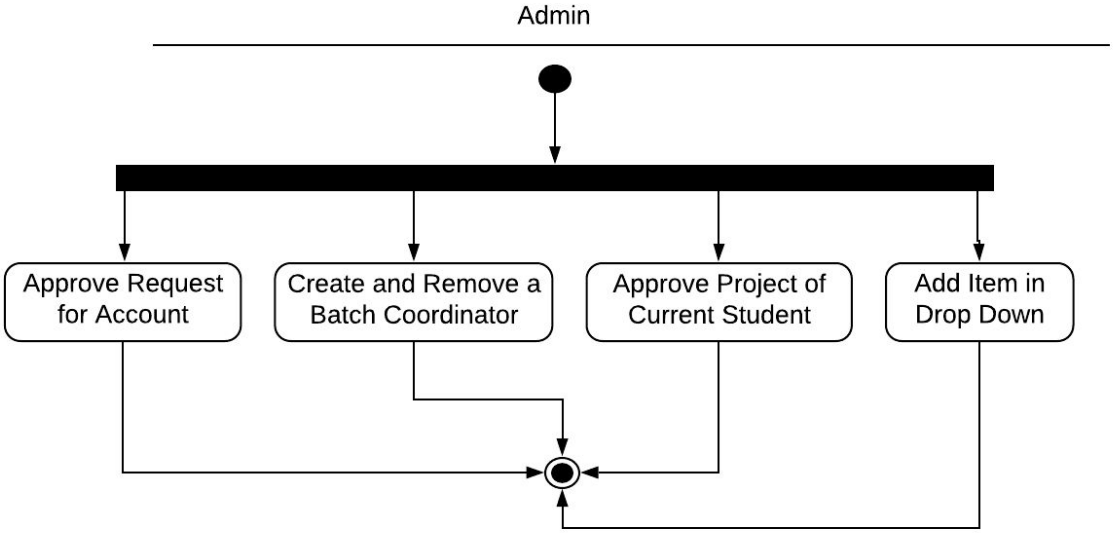

Search
User
System
Search People
Search project
Search Reserach
Select Item from Dropdown
Provide search Credentials
Find Result From Databse
Result Found?
Yes
No
Display Result
Result Not Found

Level: 1.7



Level:1.8

Admin Work



Level: 1.9

Data Based Modelling

DATA MODELING CONCEPT :

If software requirements include the necessity to create, extend or interact with a database or complex data structures need to be constructed and manipulated, then the software team chooses to create data models as part of overall requirements modeling. The entity-relationship diagram (ERD) defines all data objects that are processed within the system, the relationships between the data objects and the information about how the data objects are entered, stored, transformed and produced within the system.

DATA OBJECTS :

A data object is a representation of composite information that must be understood by the software. Here, composite information means information that has a number of different properties or attributes. A data object can be an external entity, a thing, an occurrence, a role, an organizational unit, a place or a structure.

Data object identification :

Serial	Noun	Problem(p) / solution(s) space	Attribute
1	user	p	
2	account	p	
3	User's account	p	
4	Admin account	p	
5	admin	s	10,7
6	teacher	s	7,10

7	email	s	
8	Confirmation code	p	
9	student	s	7,10,11,12,13,18,19,22, 23,20,21
10	password	s	
11	name	s	
12	IIT programme	s	
13	batch	s	
14	profile	p	
15	Reset password	p	
16	bsse	p	
17	Not bsse	p	
18	session	s	
19	college	p	
20	Graduate University Name	s	
21	Department	s	
22	current student	s	
23	Alumni	s	
24	Project	s	37,39,50,52
25	Professional Career	s	34,35,36
26	Research	s	38,37
27	Higher Studies	s	59,60,37

28	Contact	s	41,42,43,7,44
29	Skillset	s	50,52,37
30	Academic Project	p	
31	SPL-1	p	
32	SPL-2	p	
33	SPL-3	p	
34	Organization type	s	
35	Organization name	s	
36	designation	s	
37	Domain	s	
38	research title	s	
39	Project title	s	
40	contact info	p	
41	Mobile number	s	
42	Github link	s	
43	LinkedIn link	s	
44	facebook link	s	
45	authenticating accounts	p	
46	batch coordinator	s	7,10
47	items	p	
48	drop down menu	s	52,37,59,60,12,13,18,20,21,35,36
49	search	p	
50	tools & technology	s	

51	Project tools & technology	p	
52	environment	s	
53	Project environment	p	
54	domain	p	
55	Project domain	p	
56	Research content name	p	
57	content name	p	
58	Research domain	p	
59	University name for higher studies	s	
60	Country name for higher studies	s	
61	desired dropdown option	p	
62	desired option	p	
63	Database	p	
64	Access Log	s	65,66
65	Ip Address	s	
66	Date and Time	s	

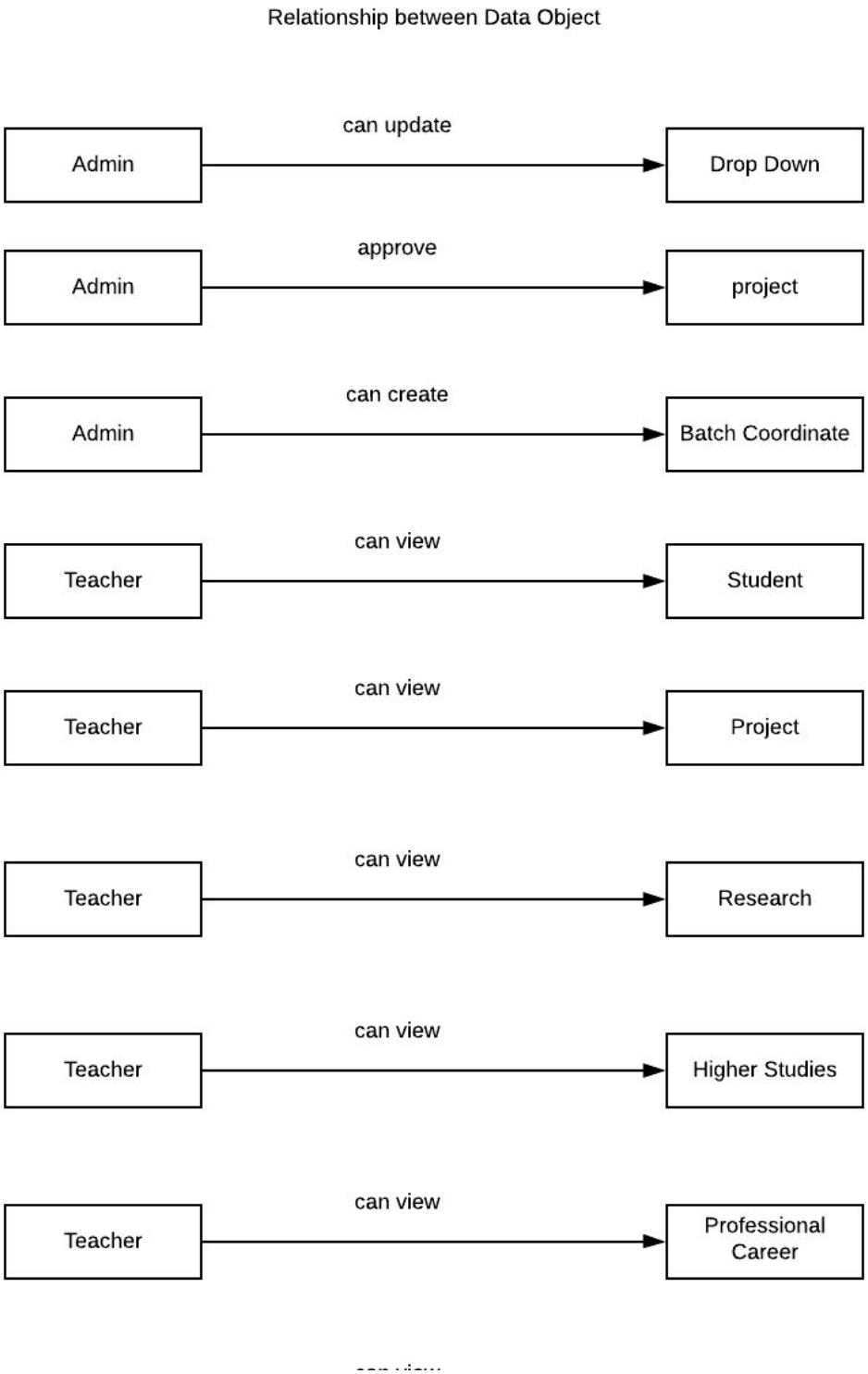
Potential data object :

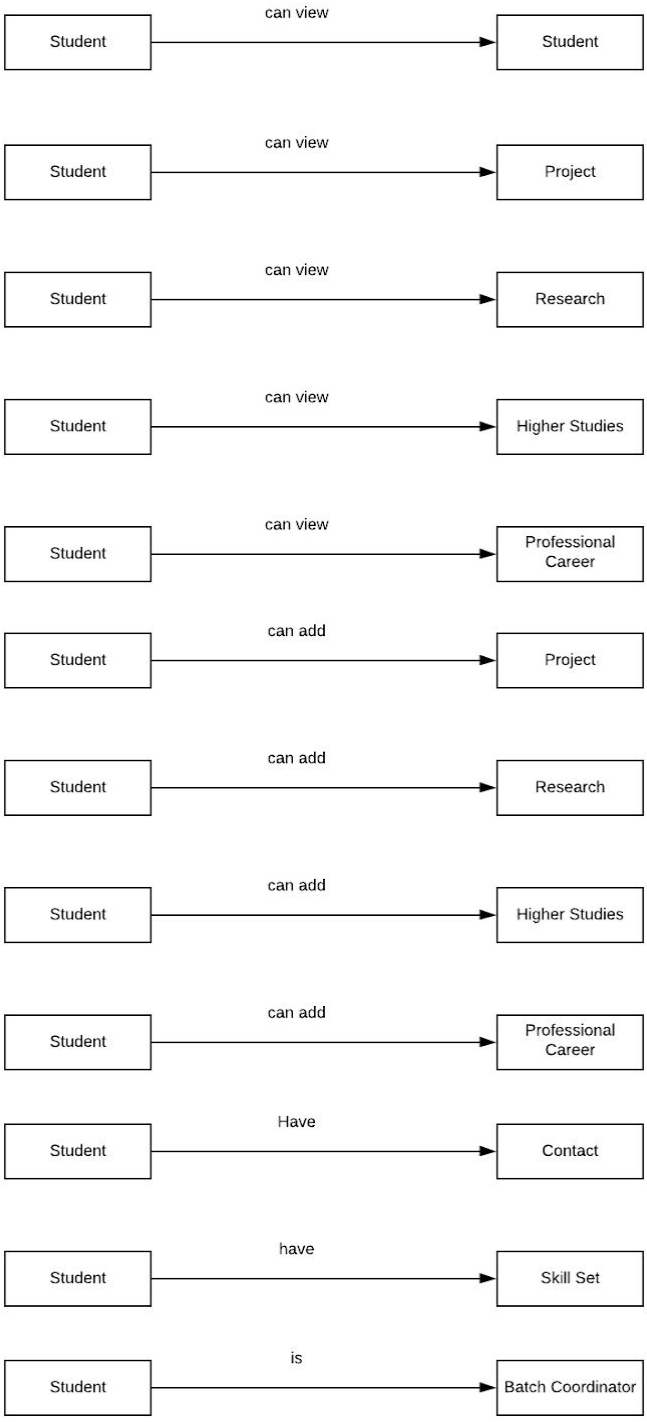
1. Admin
2. Teacher

3. Student
4. Project
5. Professional Career
6. Research
7. Higher Studies
8. Contact
9. Skillset
10. Drop down
11. Batch Coordinator
12. Access Log

Analysis: We can merge students and contact two tables. Because all the students have to have contact information and it can not be duplicated.

Data Object Relationship:

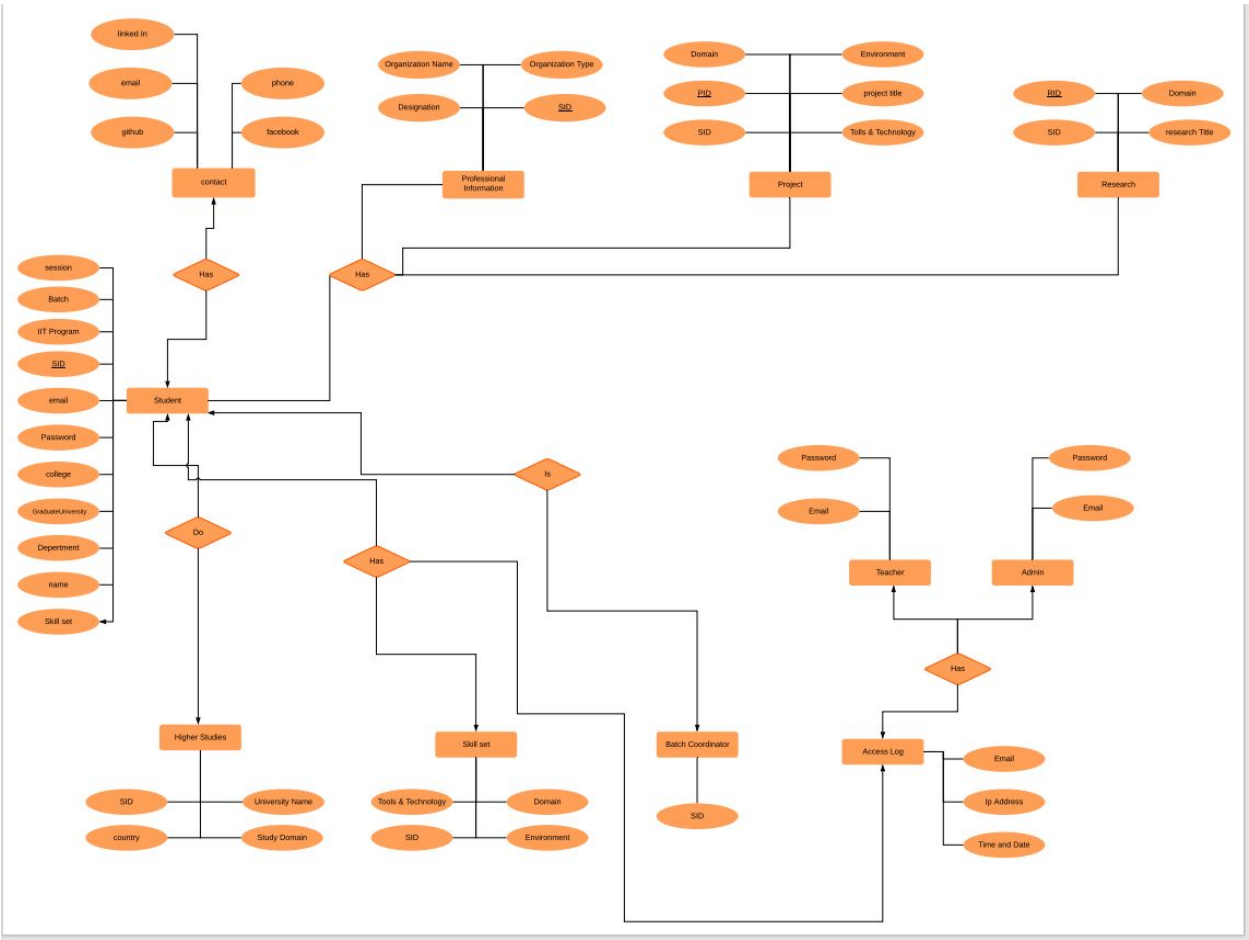



Student
can view
Student
Student
can view
Project
Student
can view
Research
Student
can view
Higher Studies
Student
can view
Professional Career
Student
can add
Project
Student
can add
Research
Student
can add
Higher Studies
Student
can add
Professional Career
Student
Have
Contact
Student
have
Skill Set
Student
is
Batch Coordinator

ER Diagram:

Definition of ER Diagram

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how “entities” such as people, objects or concepts relate to each other within a system.



Er diagram link
https://drive.google.com/file/d/1KxZvVYdMUl11W0uPSQeeDddIcuX0XpP4/view?usp=sharing

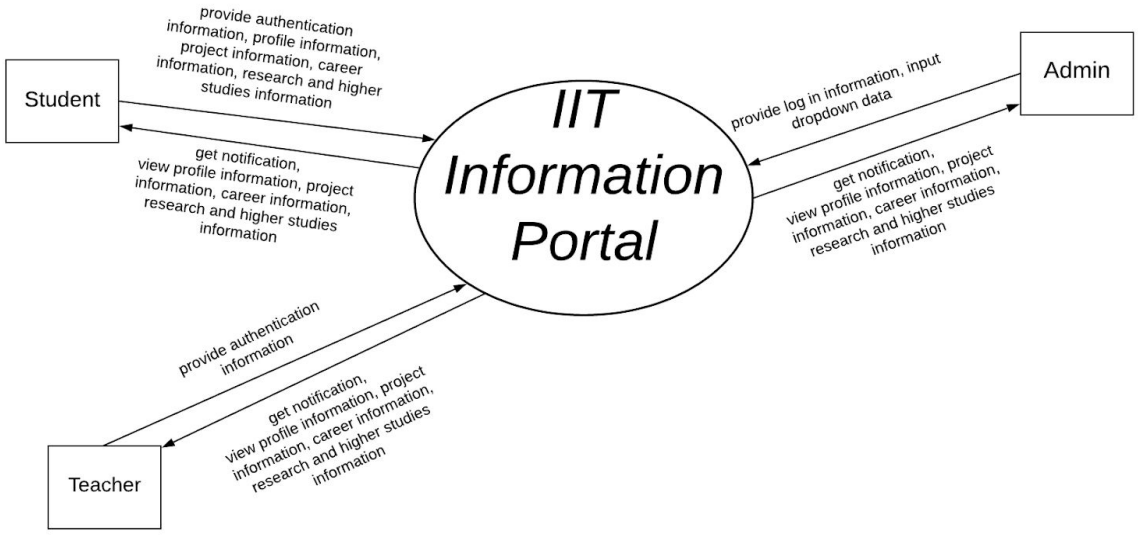
Table Schema:

Data Object	Attribute	Type	Size
Admin	email address password	Varchar Varchar	40 40
Teacher	Email address password	Varchar Varchar	40 40
Student	Name SID Email address Password Session IIT program Batch College Graduate University Graduate department	Varchar Varchar Varchar Varchar Varchar Varchar Varchar Varchar Varchar Varchar	40 40 40 40 40 40 40 40 40 40
Batch Coordinator	SID Program batch Number	Varchar Varchar	40 40
Project	PID Title Domain Project Category Environment Tools and Technology SID	Varchar Varchar Varchar Varchar Varchar Varchar Varchar	40 40 40 40 40 80 40
Professional Career	Organization Name Organization type	Varchar Varchar	40 40

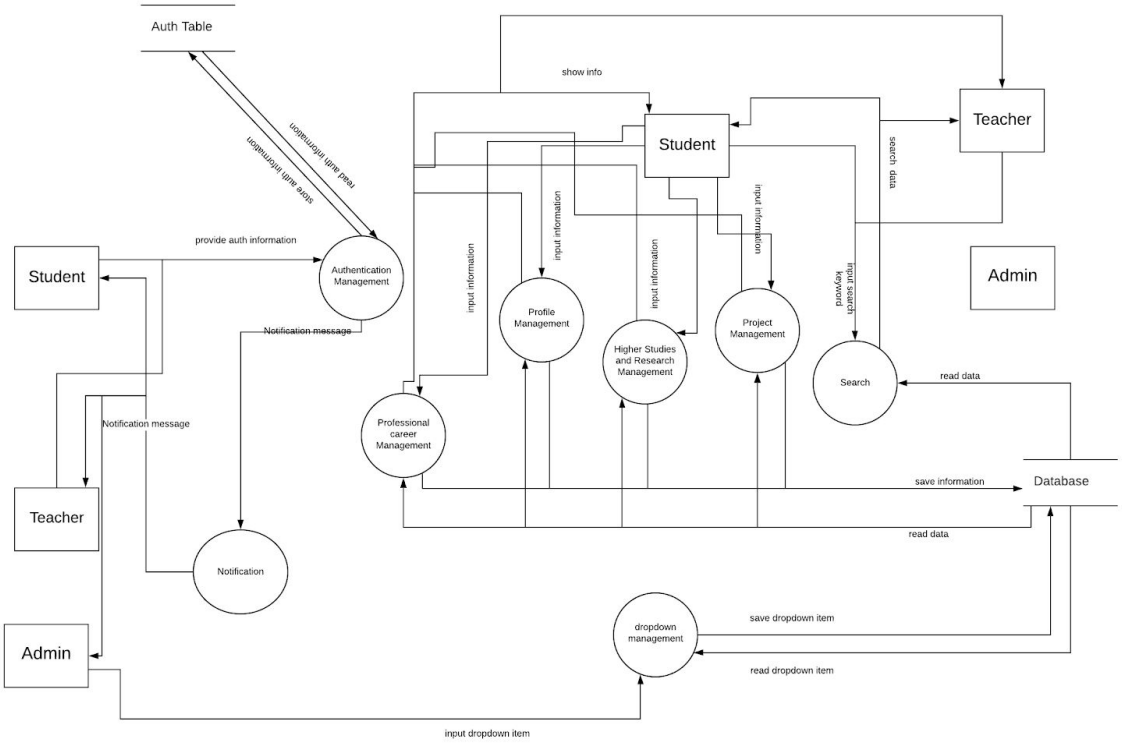
	Designation SID	Varchar Varchar	40 40
Research	RID SID Research Title Domain	Varchar Varchar Varchar Varchar	40 40 40 40
Skill Set	Domain Tools & Technology Environment SID	Varchar Varchar Varchar Varchar	40 80 40 40
Access Log	Email Ip address time	Varchar Varchar Varchar	40 40 40
Contact	SID email(additional) Facebook link Github link Linked in link Personal website	Varchar Varchar Varchar Varchar Varchar Varchar	40 80 80 80 80 80
Higher Studies	SID University Name Country Domain	Varchar Varchar Varchar Varchar	40 40 40 40

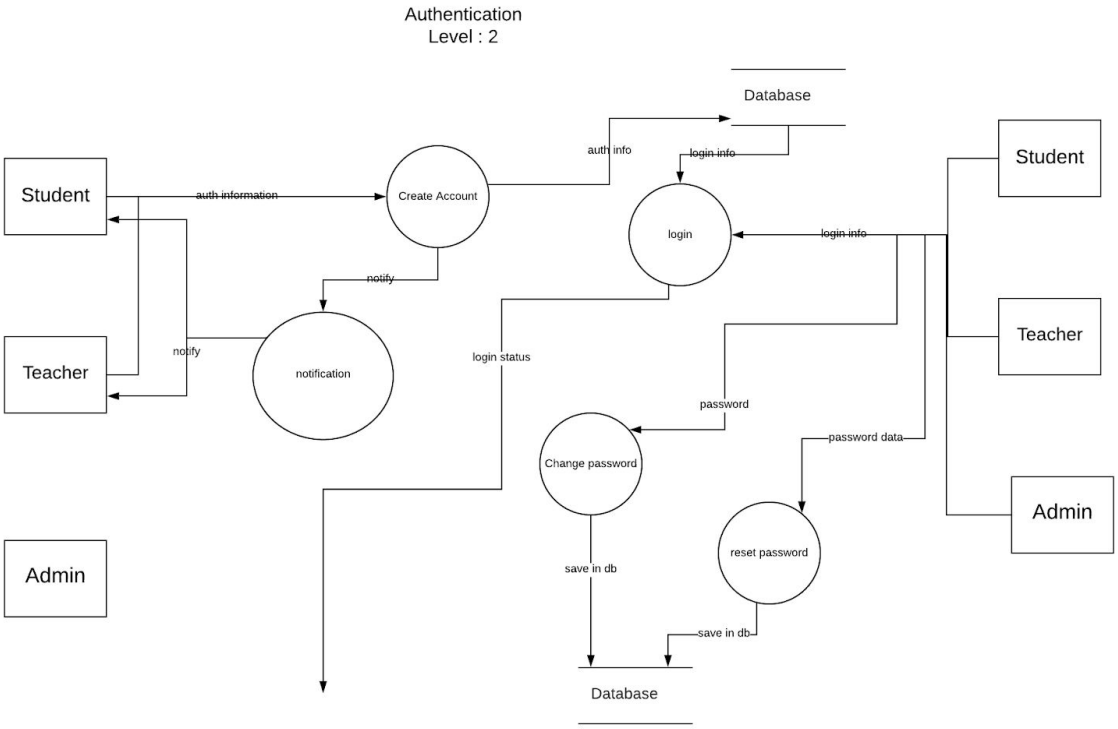
Data Flow Diagram

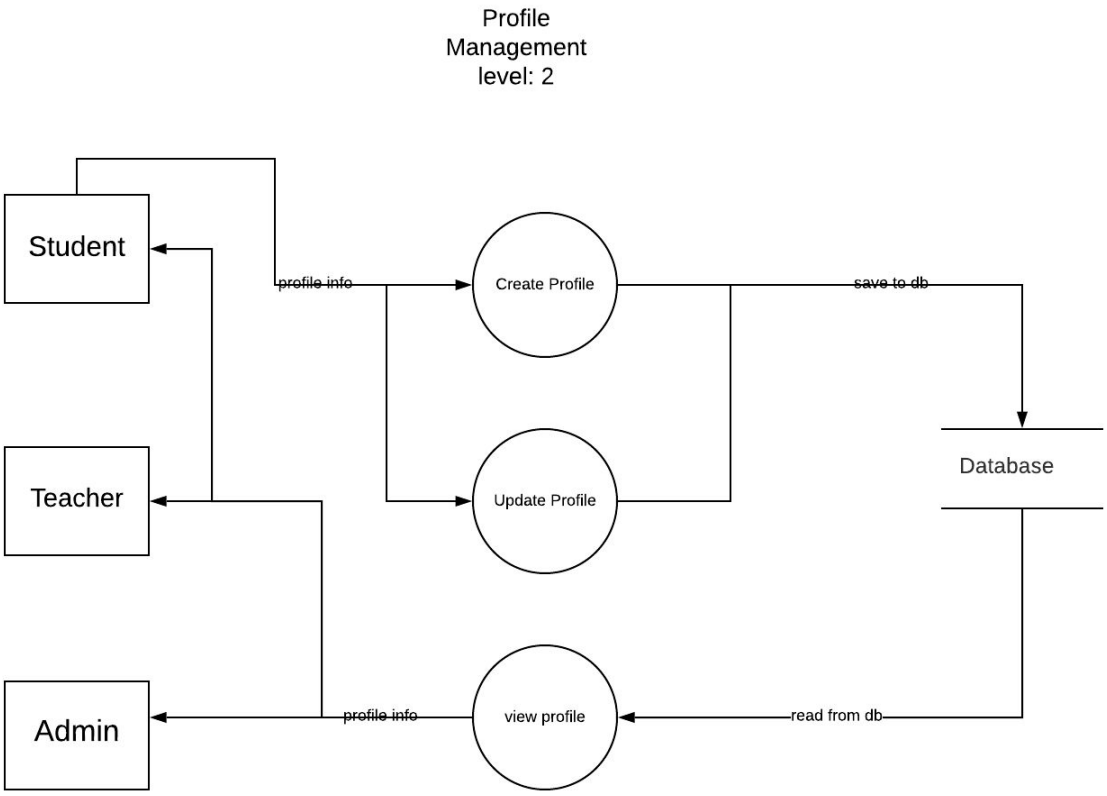
Level: 0



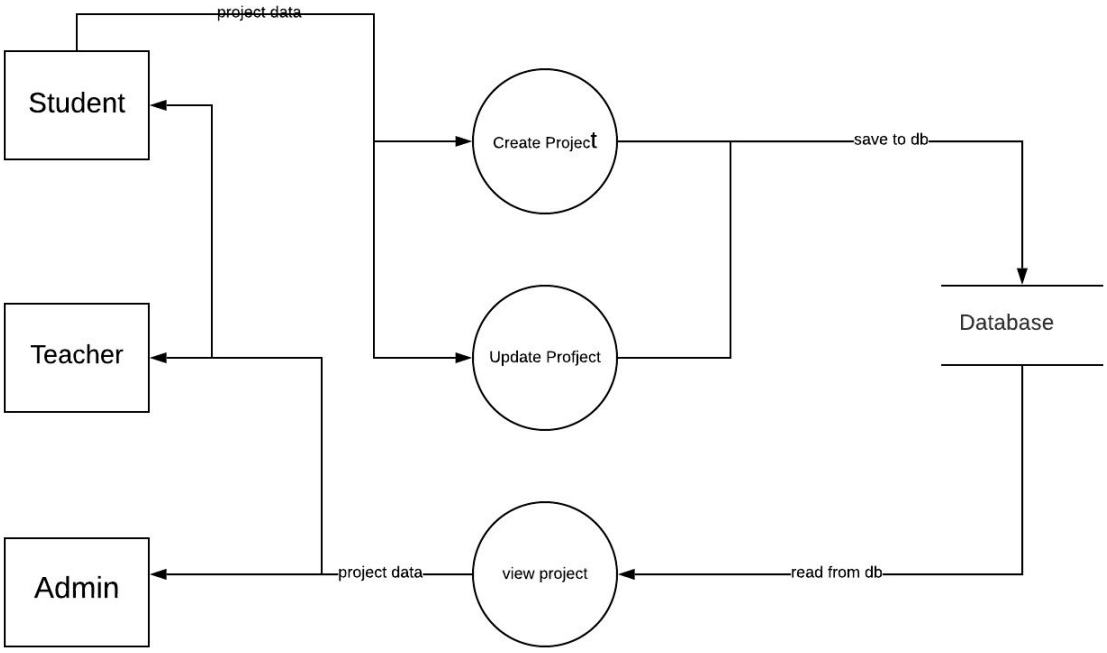
Data Flow Diagram
Level: 1

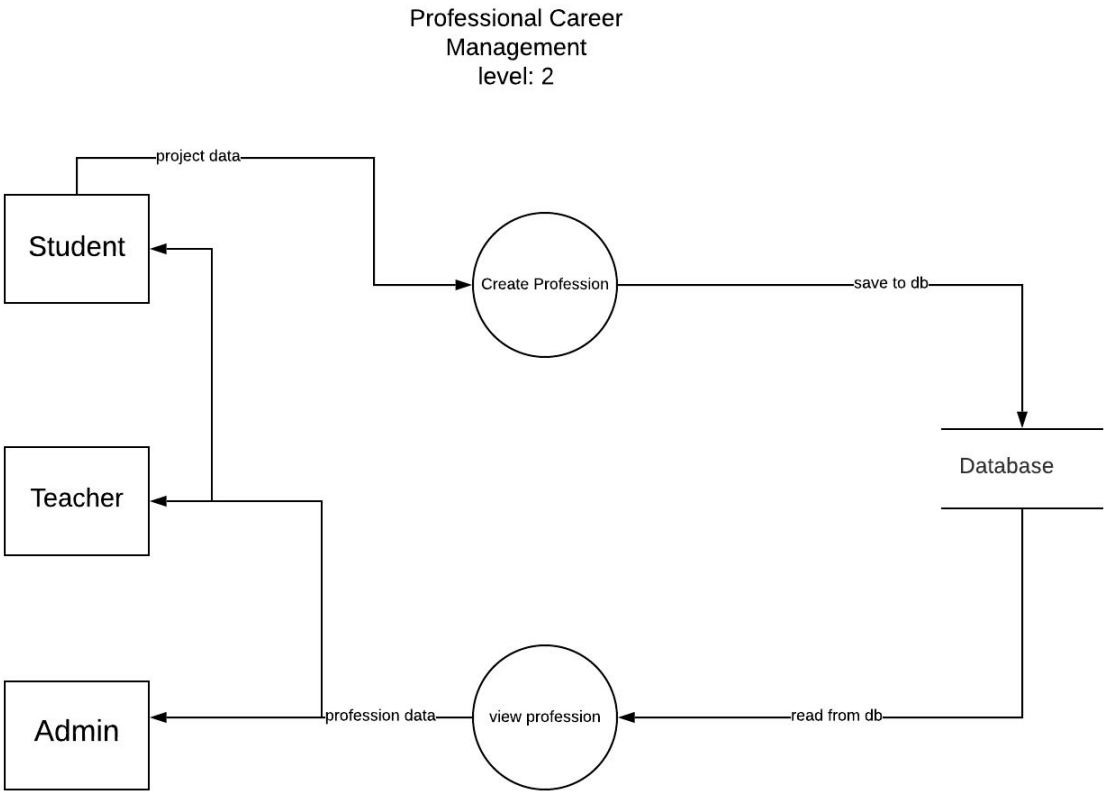


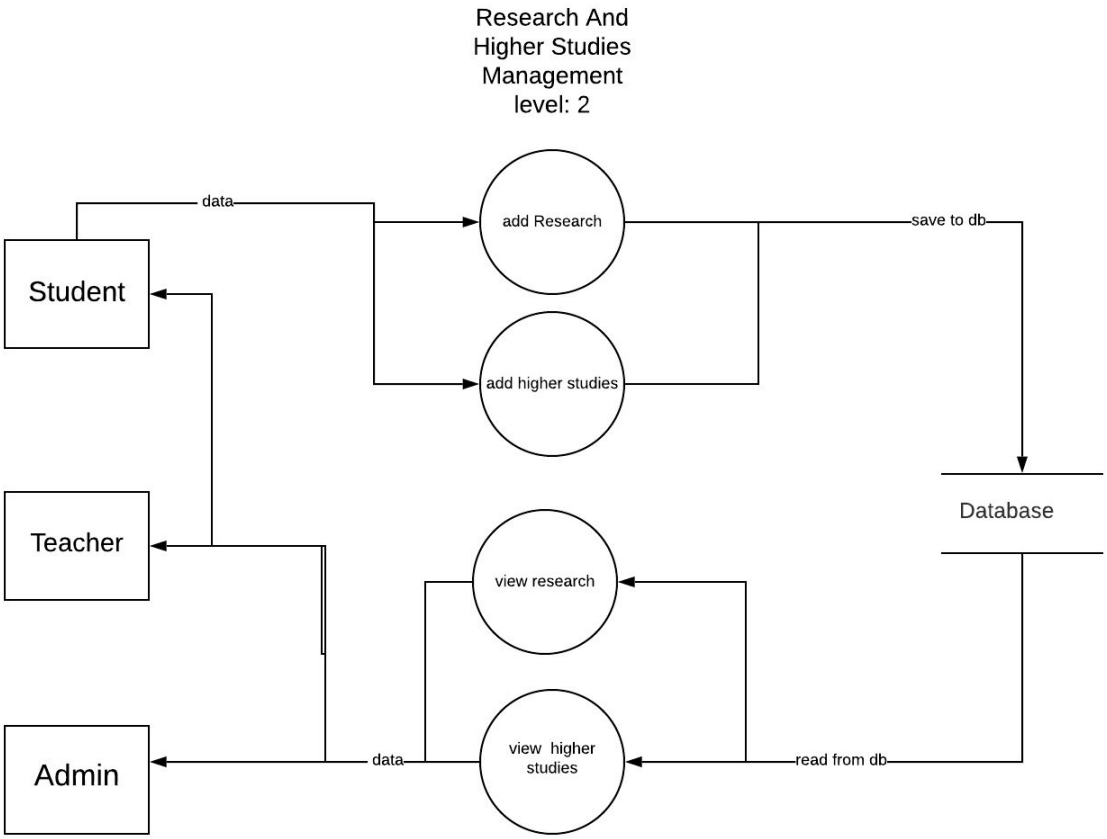

Authentication
Level : 2
Database
Student
auth information
Create Account
auth info
login info
Student
login
login info
notify
Teacher
notify
notification
login status
Teacher
password
Change password
password data
Admin
Admin
reset password
save in db
save in db
Database

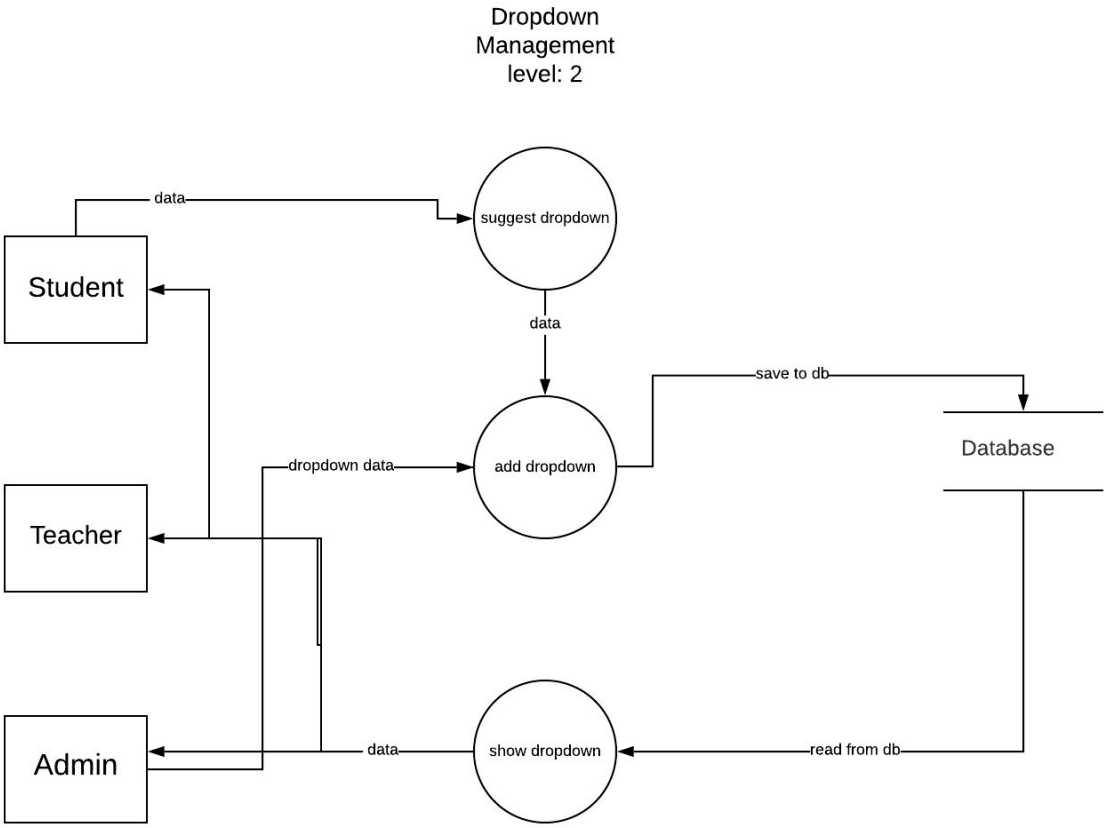

Profile
Management
level: 2
Student
Teacher
Admin
profile info
Create Profile
Update Profile
save to db
Database
profile info
view profile
read from db

Project
Management
level: 2




Professional Career
Management
level: 2
project data
Student
Create Profession
save to db
Database
Teacher
Admin
profession data
view profession
read from db


Research And
Higher Studies
Management
level: 2
data
add Research
save to db
Student
add higher studies
Database
Teacher
view research
Admin
data
view higher
studies
read from db


Dropdown
Management
level: 2
data
suggest dropdown
Student
data
save to db
Database
dropdown data
add dropdown
Teacher
Admin
data
show dropdown
read from db