

Veer Narmad South Gujarat University, Surat.

**Department of Information and
Communication Technology**

M.Sc. (Information Technology) Programme

Project Report

9th Semester

**M.Sc. (Information Technology)
5 Year Integrated Course**

Year 2022-2023

DoubtCart

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Veer Narmad South Gujarat University, Surat.

Department of Information and Communication Technology

M.Sc. (Information Technology) Programme

Certificate

This is to certify that Ms. **Badkas Poorviben Bhagirathbhai** with Exam Seat Number:
 and PG Registration Number: E has worked on his/her part
time project work entitled **DoubtCart** as a partial fulfillment of the requirements for 9th ***Semester***
- M.Sc. (Information Technology) [5 Year Integrated course], during the academic
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Place : Dept. of ICT, VNSGU, Surat.

Internal Project Guide
M.Sc.(I.T.) 9th Semester
Department of I.C.T.
Veer Narmad South Gujarat University,
Surat

Head of the Department
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Surat

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From,
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1 Introduction

DoubtCart is a web Application to help Students to ask their Doubts to their Friends and Seniors without any hesitation. It is a Platform which provide opportunity to students to network with each other. It is hard for students to ask Practical or theory Doubts to faculties or any seniors Physically or face to face. Online Mode eliminates the hesitation part from Asking Doubt and here the DoubtCart came in Frame. Also Having Right Source of material to read for exams or interview Preparation is too time consuming, DoubtCart Provide Subject Wise Resources to read and some Important files to Download from Resources. DoubtCart Combines the solution of These 2 Common Problem of Students.





2 Proposed System

DoubtCart is a Web Application Platform for students to ask their doubts to Other Students. Students can Answer to the Doubts. DoubtCart also provide Resources to read and download including IT subjects for both Programming and Web Development

2.1 Scope

The scope of DoubtCart covers frequent Doubts and need of Resources of students. Students are very curious specially Freshers but they don't have the network with seniors or any other students initially so sometime because of fear or hesitation they don't ask their doubts or notes for study with anyone. DoubtCart provide platform for such students who want ask doubt and don't want to reveal their name. Some students are smart enough to explain things or solve doubts for others. DoubtCart Provide Opportunity to this type of student to showcase their talent by solving Doubts. In this Way DoubtCart Helps Students to solve their day to day problems for free.

2.2 Objective

-  To provide Free Platform for Students who want to ask their problem and also want to showcase their Problem-Solving Approaches
-  To Provide Free Resources
-  Improve Problem Solving Approach of students
-  Develop Habit of Helping and Solving Problems of Others in Students

2.3 Constraints

2.3.1 Hardware Constraints

- ✚ Computer or Laptop needs power supply
- ✚ Cannot access through mobile App
- ✚ Internet connection required

2.3.2. Software Constraints

- ✚ Development with NetBeans 13
- ✚ Need Compatible Jar files
- ✚ Need Payara micro server

2.4 Advantages

The four main Advantages are:

- Knowledge Sharing
- Networking
- Save Students Time
- Quality Study material

Knowledge Sharing

The Main Objective of DoubtCart is to Knowledge Sharing by Students. There are infinite approaches to solve a particular problem but which one is correct and what are these approaches? When Students answer doubts and read other student's solution they gain some knowledge about different problem solving approach.

Networking

Networking with seniors and other classmates is task for freshers and introverts. Now after Covid they prefer to do all the things Online and with DoubtCart they can achieve networking with people Online!

Save Student Time

Students have a no of tasks to complete. Bugs and Error are Most time-Consuming things to solve and What a Student want is if someone have already the solution for it then it will save my time to find new one. By Reviewing already asked Doubts and Answers Students can save time by Asking again in fact they can just search and apply solutions to their problem without wasting time.

Quality Study Material

Students need Quality material for Exam Preparation but how to collect one?! DoubtCart Provide Subject wise Resources to Read and Some Files to Download too. Students Can Refer this material and save their time to makes notes. It is helpful for Last minute Studies too.

2.5 Limitation

- DoubtCart doesn't guarantee that every Doubt on site will be Answered
- Doubts may take too much time to be resolved cause it is totally dependent on Users of DoubtCart.
- Students can't interact with each other within the system via any Chat system.
- It will be hard task for Admin to Validate all data like comments and answers on a large scale.

3. Environment Specification

3.1.1 Hardware Requirement

Client side

RAM	512 MB
HARD Disk	10 MB
Processor	1.0 GHz

Server side

RAM	1 GB
HARD Disk	20 GB
Processor	20 GHz

3.1.2 Software Requirement

Client side

Web Browser	Chrome or any Compatible Browser
Operating System	Windows Or any Equivalent OS

Server Side

Web Server	Payara micro
Server Side Language	Java EE (JDK8)
Database Server	Apache MYSQL

3.2 Development Description

Tools : NetBeans 13 | Docker | Kubernetes | Git

Technologies : Java EE , HTML5, CSS3, Bootstrap, Prime faces, JSF





4 System Planning

4.1 Feasibility Study

The Feasibility Study for the Project has been carried out on the basis of

- 1: Schedule
- 2: Technology
- 3: Resource Availability

1: Schedule Feasibility

-  Project is Initialized with Specific Deadline.
-  The duration is allotted to complete the project within 7 weeks.
-  The development and testing for project is modularized timewise.
-  We require to determine whether the deadlines are mandatory or desirable.

2: Technology Feasibility

- ✚ The Project is Developed in JAVA EE.
- ✚ As such there is no risk involved as far as technical aspects of the project is concerned
- ✚ The Technology is selected basis on the Recent Trends.

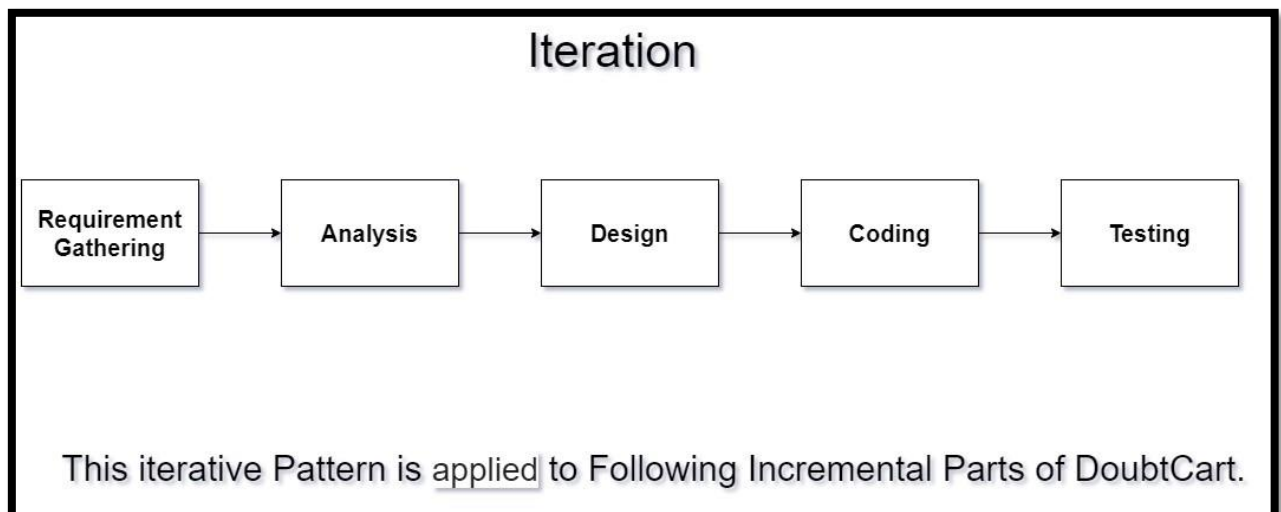
3: Resource Availability

- ✚ The Require hardware and software specifications is mentioned in the requirement section of documentation.
- ✚ The team of developers is needed for different task like design, testing, development etc...

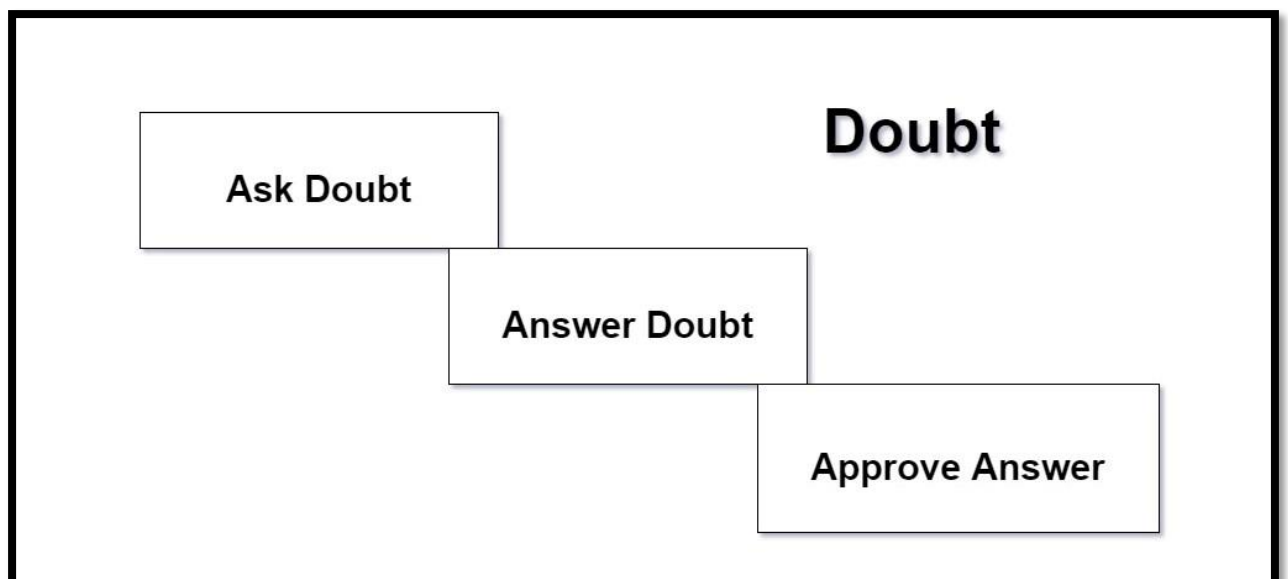
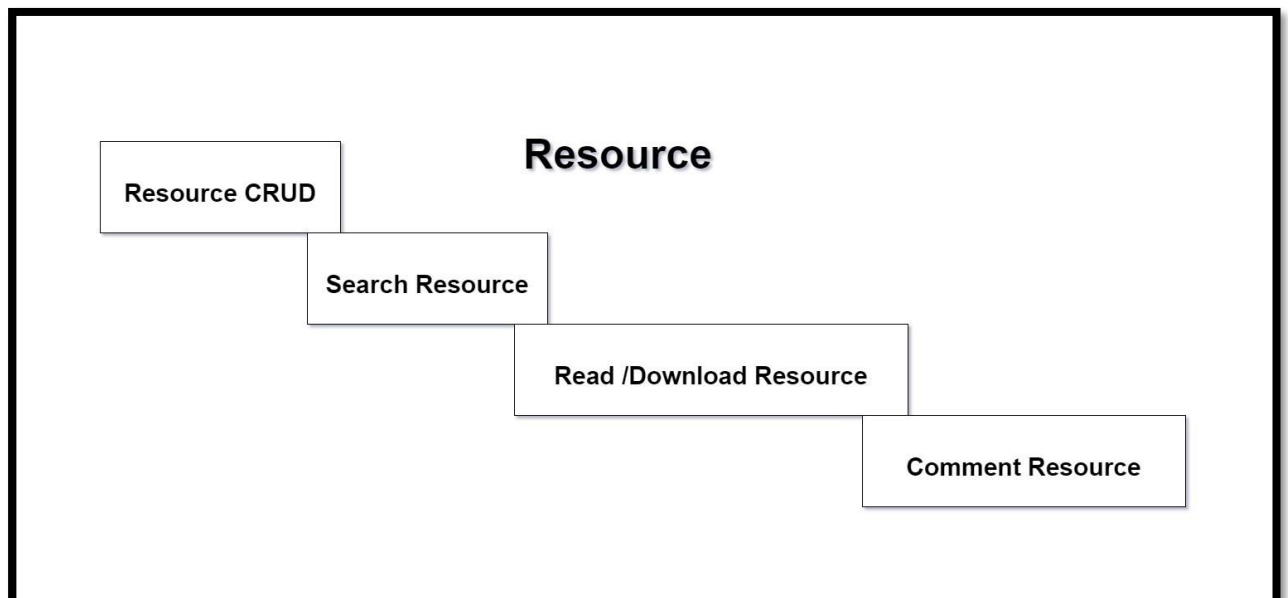
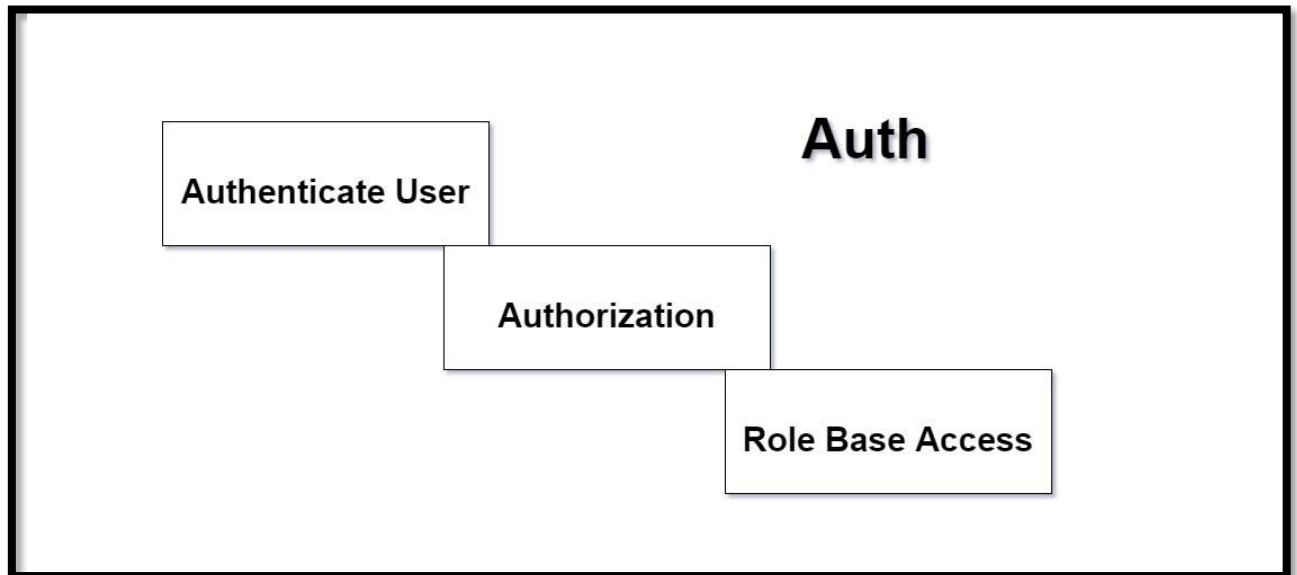
4.2 Software Engineering Model

In the DoubtCart, the requirements are decomposed into many small parts that can be incrementally developed. DoubtCart adopts Iterative development. Each incremental part is developed over an iteration. Each iteration is intended to be small and easily manageable and that can be completed within a couple of weeks.

Agile Model



Incremental Modules



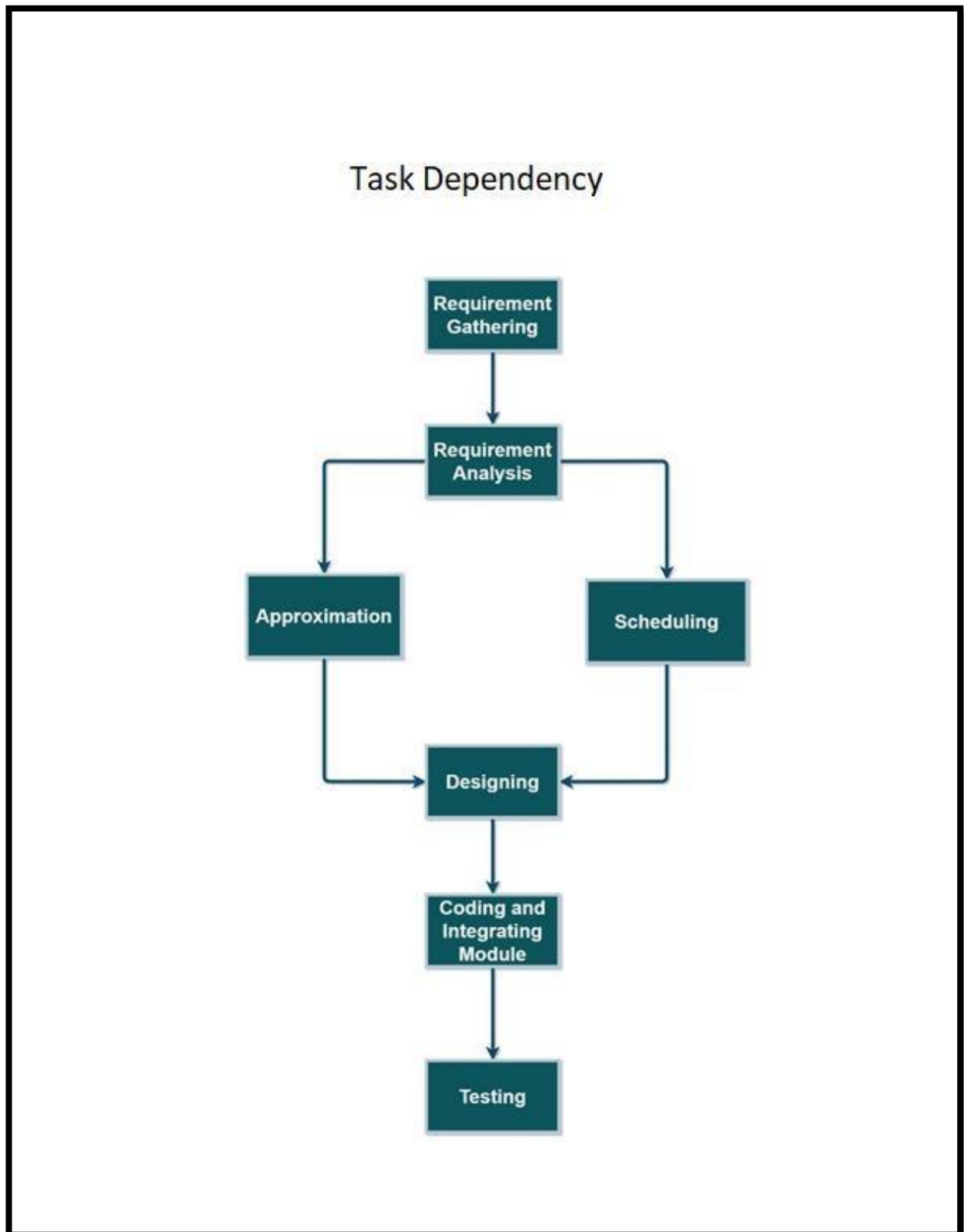
4.3 Risk Analysis

Risk description	Likelihood of the risk occurring	Impact if the risk occurs	Severity <i>Rating based on impact & likelihood.</i>	Owner <i>Person who will manage the risk.</i>	Mitigating action <i>Actions to mitigate the risk e.g. reduce the likelihood.</i>	Contingent action <i>Action to be taken if the risk happens.</i>	Progress on actions
Project purpose and need is not well-defined.	Medium	High	High	Project Sponsor	Complete a business case if not already provided and ensure purpose is well defined on Project Charter and PID.	Escalate to the Project Board with an assessment of the risk of runaway costs/never-ending project.	Business case re-written with clear deliverables and submitted to the project board for approval.
Project design and deliverable definitions incomplete.	Low	High	High	Project Sponsor	Define the scope in detail via design workshops with input from subject matter experts.	Document assumptions made and associated risks. Request high risk items that are ill-defined are removed from scope.	Design workshops scheduled.
Project schedule is not clearly defined or understood	Low	Medium	Medium	Project Manager	Hold scheduling workshops with the project team so they understand the plan and likelihood of missed tasks is reduced.	Share the plan and go through upcoming tasks at each weekly project progress meeting.	Workshops scheduled.
No control over staff priorities	Medium	Medium	Medium	Project Manager	The Project Sponsor will brief team managers on the importance of the project. Soft book resources as early as possible and then communicate final booking dates as a part of the scheduling workshops. Identify back ups for each human resource on the project.	Escalate to the Project Sponsor and bring in back up resource.	Project Sponsor has agreed to hold briefing. Now making arrangements for a meeting room.
Estimating and/or scheduling errors	Medium	High	High	Project Manager	Break this risk into two: 'cost estimating' and 'scheduling errors'. Use two methods of cost estimation, and carefully track costs and forecast cost at completion making adjustments as necessary. Build in 10% contingency on cost and scheduling. Track schedules daily and include schedule review as an agenda item in every project team meeting. Flag forecast errors and/or delays to the Project Board early.	Escalate to project sponsor and project board. Raise change request for change to budget or schedule. Pull down contingency.	Contingency agreed by Project Board.
Unplanned work that must be accommodated	Low	High	Medium	Team Manager	Attend project scheduling workshops. Check previous projects, for actual work and costs. Check all plans and quantity surveys. Document all assumptions made in planning and communicate to the project manager before project kick off.	Escalate to the Project Manager with plan of action, including impact on time, cost and quality.	Team managers attending scheduling workshops.
Lack of communication, causing lack of clarity and confusion.	Medium	Medium	Medium	Project Manager	Write a communication plan which includes frequency, goal, and audience of each communication. Identify stakeholders early and make sure they are considered in the communication plan. Use most appropriate channel of communication for audience.	Correct misunderstandings immediately. Clarify areas that are not clear swiftly using assistance from Project Sponsor if needed.	Communication plan in progress.
Risk description	Likelihood of the risk occurring	Impact if the risk occurs	Severity <i>Rating based on impact & likelihood.</i>	Owner <i>Person who will manage the risk.</i>	Mitigating action <i>Actions to mitigate the risk e.g. reduce the likelihood.</i>	Contingent action <i>Action to be taken if the risk happens.</i>	Progress on actions

Pressure to arbitrarily reduce task durations and or run tasks in parallel which would increase risk of errors.	Low	High	Medium	Project Manager	Share the schedule with key stakeholders to reduce the risk of this happening. Patiently explain that schedule was built using the expertise of subject matter experts. Explain the risks of the changes. Share the Dennis Lock quote at https://www.stakeholdermap.com/plan-project/plan-reduction-crashing.html .	Escalate to Project Board with assessment of risk and impact of the change. Hold emergency risk management call with decision makers & source of pressure and lay out risk and impact.	Awaiting completion of the schedule.
Unresolved project conflicts not escalated in a timely manner	Low	Medium	Medium	Project Manager	Hold regular project team meetings and look out for conflicts. Review the project plan and stakeholder engagement plan for potential areas of conflict.	When aware immediately escalate to Project Board and gain assistance from Project Sponsor to resolve the conflict.	Project team meetings scheduled.
Delay in earlier project phases jeopardizes ability to meet fixed date. For example delivery of just in time materials, for conference or launch date.	Medium	High	High	Project Manager	Ensure the project plan is as accurate as possible using scheduling workshops and work breakdown structure. Use Tracking Gantt and Baseline to identify schedule slippage early.	Consider insurance to cover costs and alternative supplier as a back up.	Awaiting completion of the schedule.
Customer refuses to approve deliverables/milestones or delays approval, putting pressure on project manager to 'work at risk'.	Medium	Medium	Medium	Project Manager	Ensure customer decision maker with budgetary authority is identified before project start and is part of the project board. Communicate dates for sign-off points up front.	Escalate to project Board and recommend action e.g. to stop the project.	Customer project manager is confirming their sponsor / senior supplier.
Theft of materials, intellectual property or equipment.	Low	High	High	Project Manager	Follow security procedures, ensure Non-Disclosure Agreements (NDAs), & compliance certificates are in place. Verify all physical security measures in place. Secure insurance.	Notify appropriate authorities e.g. police, project board and initiate internal investigations.	NDAs issued. Security certificates confirmed for contractors.
Acts of God for example, extreme weather, leads to loss of resources, materials, premises etc.	Low	High	High	Project Manager	Ensure insurance in place. Familiarise project team with emergency procedures. Where cost effective put back up systems in place e.g. generators.	Notify appropriate authorities. Follow health and safety procedures. Notify stakeholders and Project Board.	Public Liability Insurance confirmed along with additional premises insurance at site B.

4.4 Project Schedule

4.4.1 Task Dependency



4.4.2 Timeline Chart

Task Name	Weeks (14 th October to 20 th October) (7 th November to 18 th December)						
	1	2	3	4	5	6	7
Training							
Requirement Gathering							
Analysis							
Project Planning							
Designing							
Coding							
Testing							
Documentation							

5. System Analysis

5.1 Detailed SRS

UserModule :

➤ Description :

UserModule defines user who is created at registration time in system. User having different types of role like admin and user. User can Register to the system and can Login. User will be able to change the password, forgot password functionality is also there. Reset password is also there.

➤ I/O Events:

Whenever user will make request to forgot password or change password or reset password, email is sent to the user.

➤ **O/P validations :**

Name : Required

Email: Required

Password: Required

Semester : Required

OTP : nullable

➤ **Constraints :**

Username : Primary Key

GroupsModule :

➤ **Description :**

GroupsModule defines that which role a user has. UserGroup table will also be updated by adding user and group data.

➤ **I/O Events:**

User will be able to access pages according to their assigned roles.

➤ **O/P validations :**

Groupname : Required

➤ **Constraints :**

Groupname : Primary Key

CategoryModule :

➤ **Description :**

CategoryModule defines a new category.

➤ **I/O Events:**

New Category will be created.

➤ **O/P validations :**

Categoryname : Required

➤ **Constraints :**

CategoryID : Primary Key

TagModule :

➤ **Description :**

TagModule defines a new tag.

➤ **I/O Events:**

New Tag will be created.

➤ **O/P validations :**

Tagname : Required

➤ **Constraints :**

TagID : Primary Key

DoubtModule :

➤ **Description :**

DoubtModule defines a new doubt. It also adds data in DoubtCategory and DoubtTag table according to received data.

➤ **I/O Events:**

New Doubt will be created.

➤ **O/P validations :**

Title : Required

Description : Required

Point : Required

isClosed : Required

➤ **Constraints :**

DoubtID : Primary Key

Username : Foreign Key

AnswerModule :

➤ Description :

AnswerModule defines a new answer for a doubt. If a user finds it useful then that user can mark it as a Helpful answer.

➤ I/O Events:

New DoubtAnswer will be created.

➤ O/P validations :

DoubtID : Required

Description : Required

Username : Required

isHelpful : Required

➤ Constraints :

DoubtID : Primary Key

Username : Foreign Key

ResourceModule :

➤ Description :

ResourceModule defines a new Resource for a semester. User can comment on a resource. Then, Comments table will be updated.

➤ I/O Events:

New Resource will be created.

➤ O/P validations :

Title : Required

Description : Required

Semester : Required

Subject : Required

Image : Required

➤ Constraints :

ResourceID : Primary Key

ResourceFilesModule :

➤ Description :

ResourceFilesModule defines a File for Resource.

➤ I/O Events:

New ResourceFile will be created.

➤ O/P validations :

ResourceID : Required

File : Required

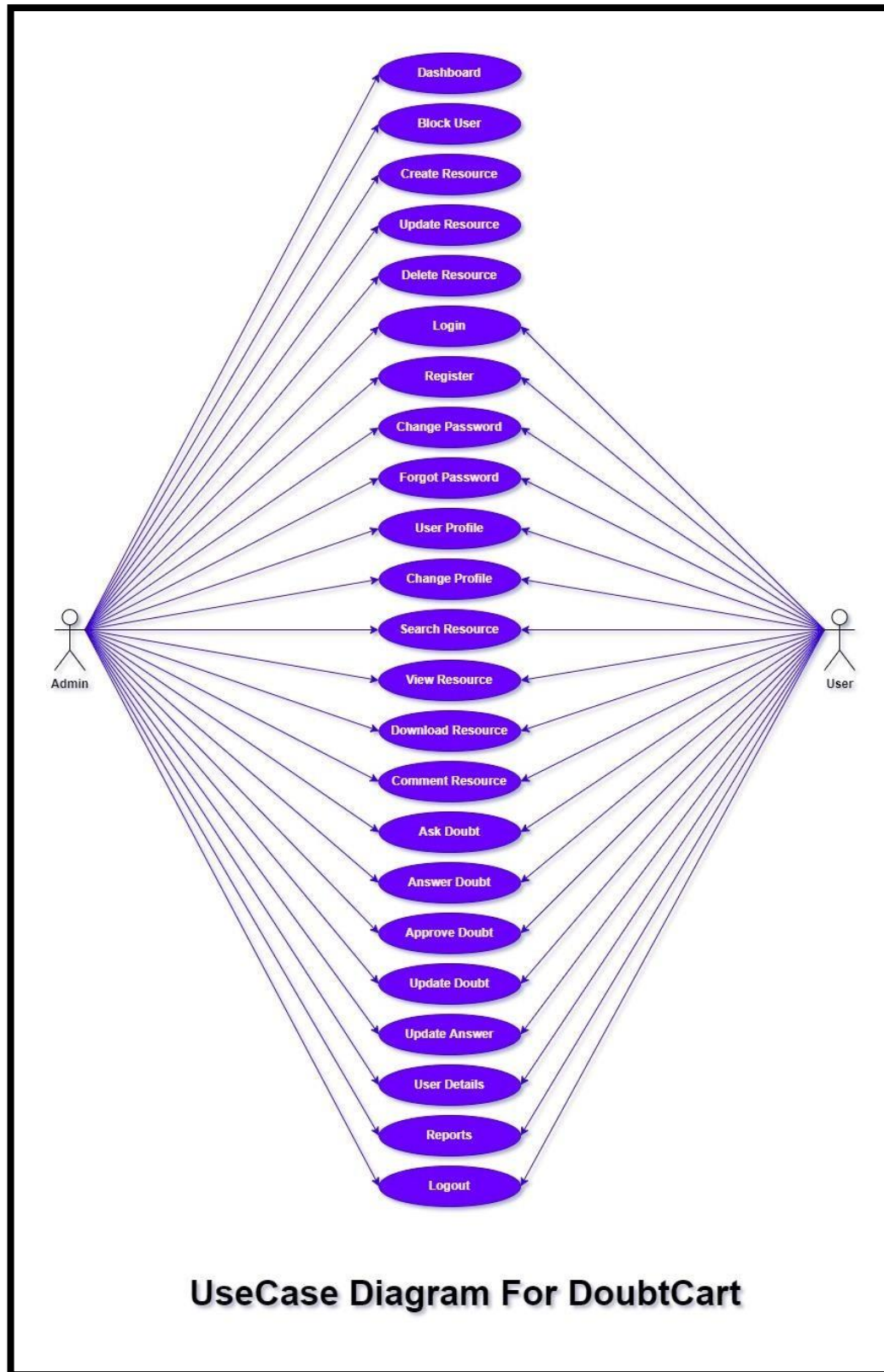
➤ Constraints :

FileID : Primary Key

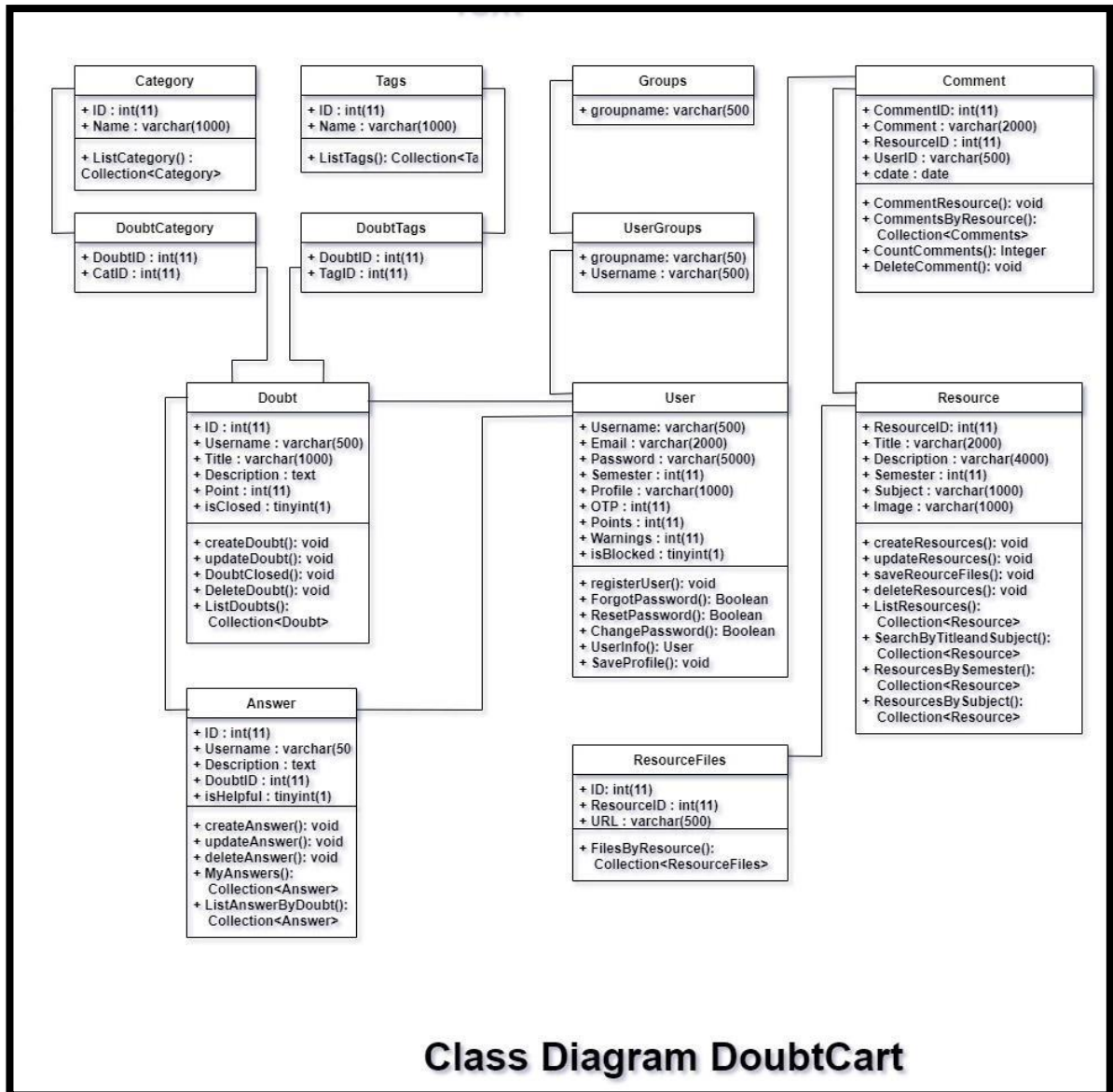
ResourceID : Foreign Key

5.2 UML Diagram

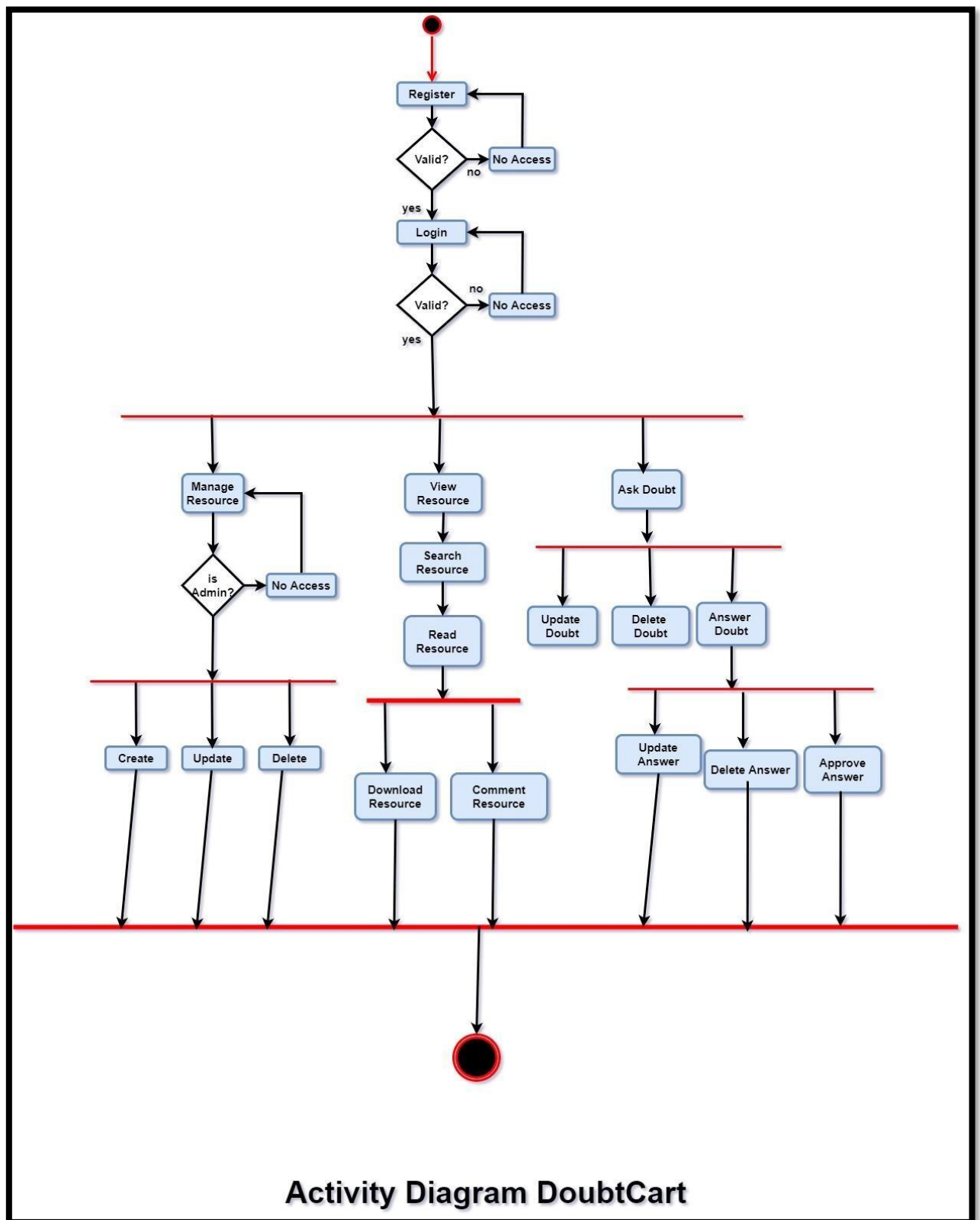
5.2.1 Use Case Diagram



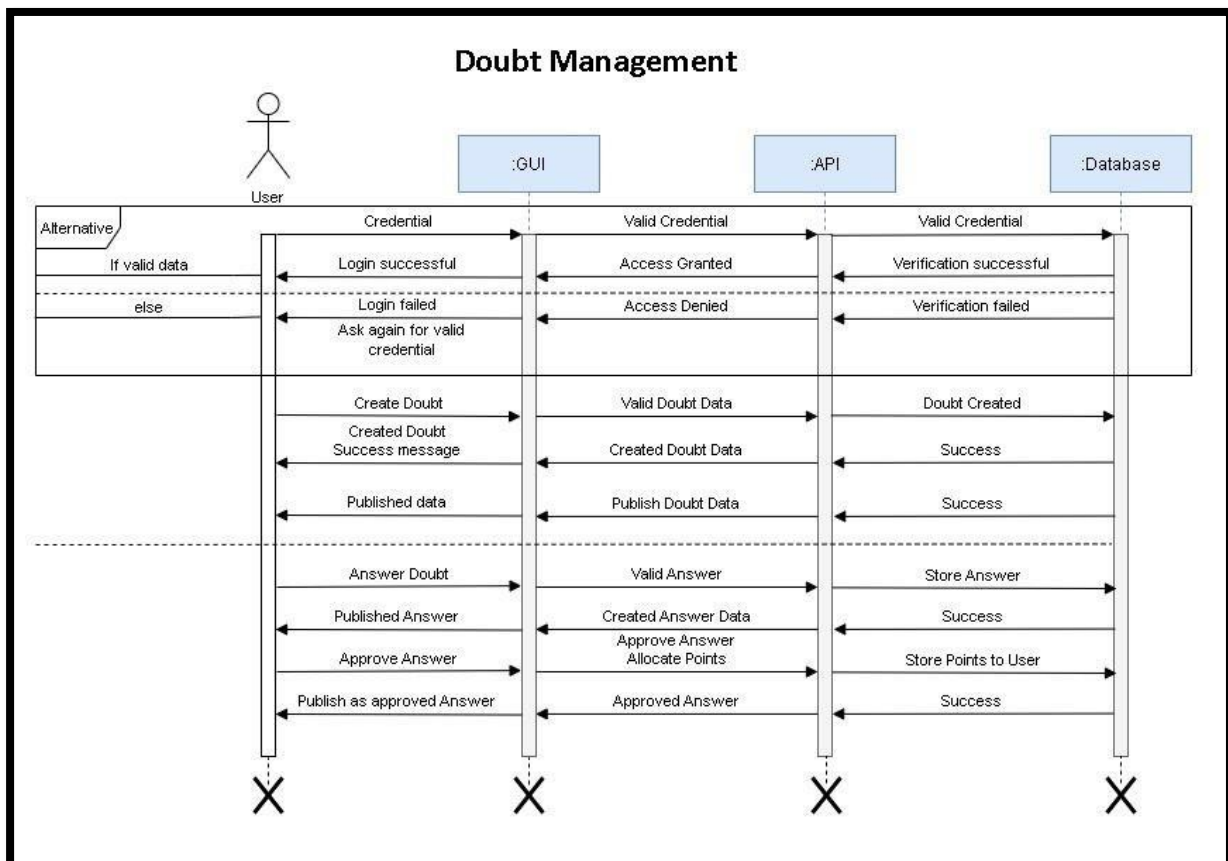
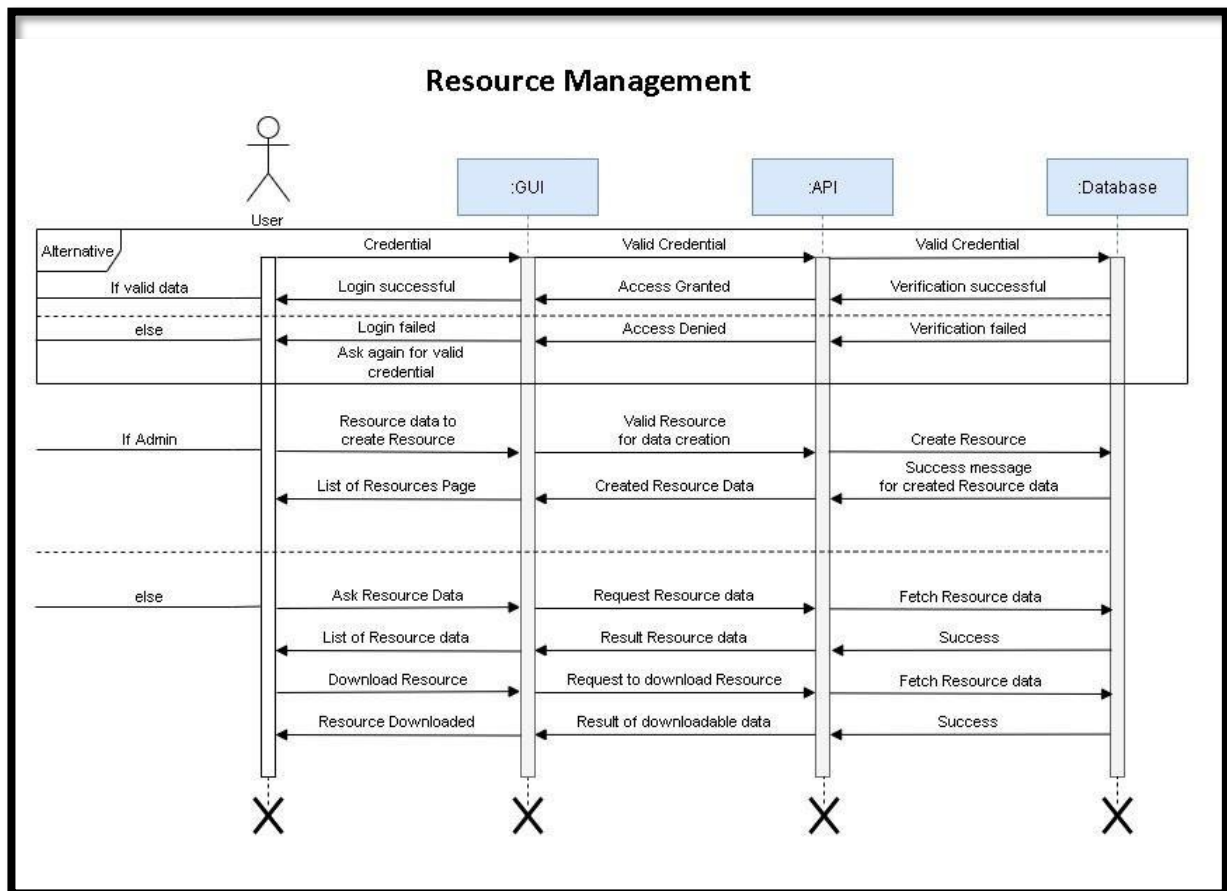
5.2.2 Class Diagram



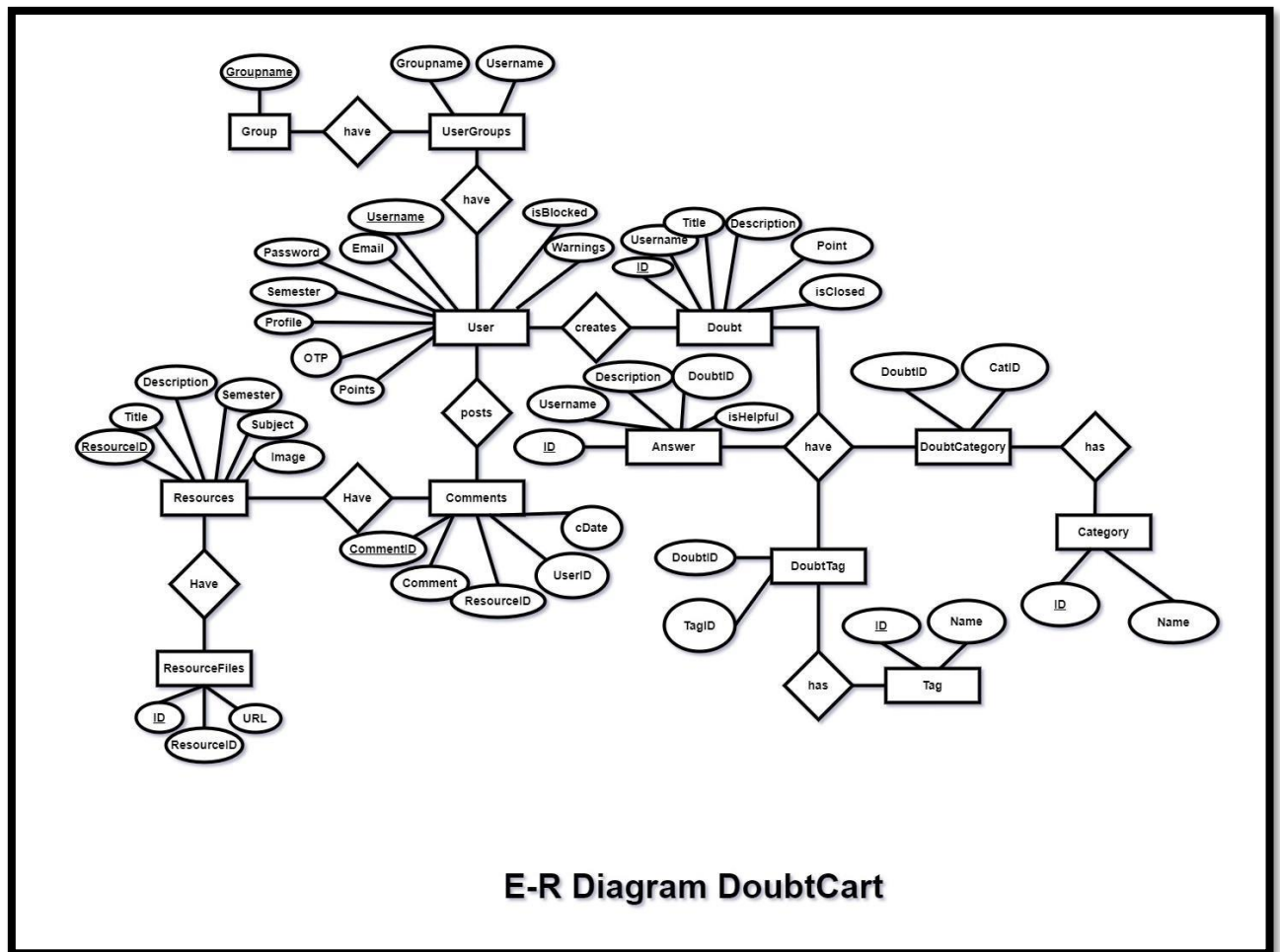
5.2.3 Activity Diagram



5.2.4 Sequence Diagram



5.3 E-R Diagram



6 Software Design

6.1 Database Design

Answer

Server: 127.0.0.1 > Database: doubtcart > Table: answer

Table structure | Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 Id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/>	2 Username	varchar(500)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	3 Description	text	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	4 DoubtID	int(11)			No	None			Change Drop More
<input type="checkbox"/>	5 IsHelpful	tinyint(1)			No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	Id	1	A	No	
Edit Rename Drop	adoubt	BTREE	No	No	DoubtID	1	A	No	
Edit Rename Drop	auser	BTREE	No	No	Username	1	A	No	

Category

Server: 127.0.0.1 > Database: doubtcart > Table: category

Table structure | Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 Id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/>	2 Name	varchar(1000)	utf8mb4_general_ci		No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	Id	23	A	No	

Comments

Server: 127.0.0.1 > Database: doubtcart > Table: comments

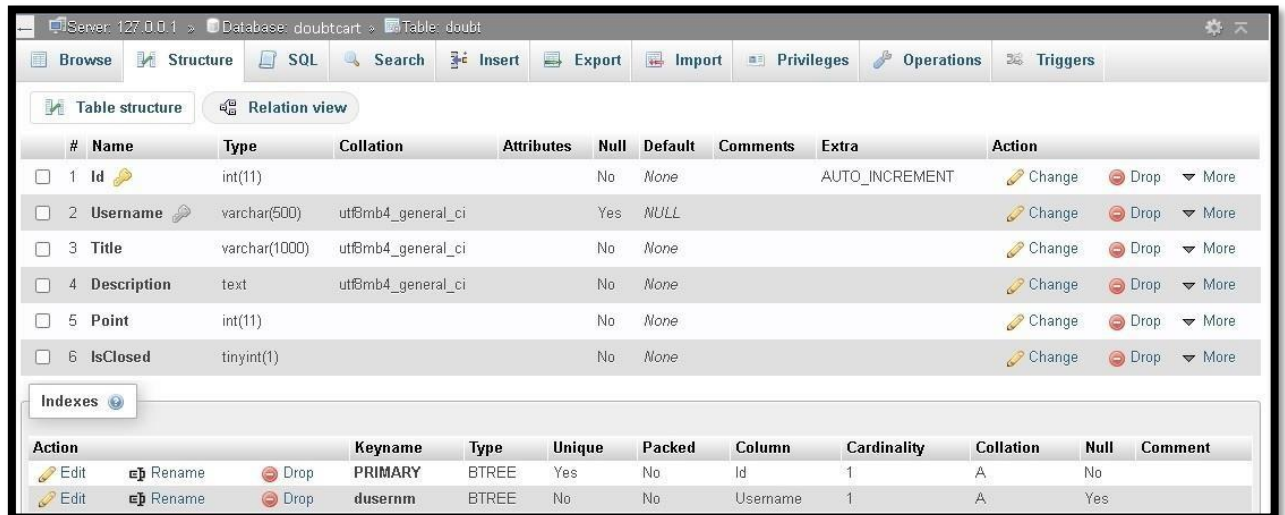
Table structure | Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 CommentID	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/>	2 Comment	varchar(2000)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	3 ResourceID	int(11)			No	None			Change Drop More
<input type="checkbox"/>	4 UserID	varchar(500)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	5 cdate	date			Yes	NULL			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	CommentID	8	A	No	
Edit Rename Drop	comr	BTREE	No	No	ResourceID	4	A	No	
Edit Rename Drop	comu	BTREE	No	No	UserID	4	A	No	

Doubt



Server: 127.0.0.1 > Database: doubtcart > Table: doubt

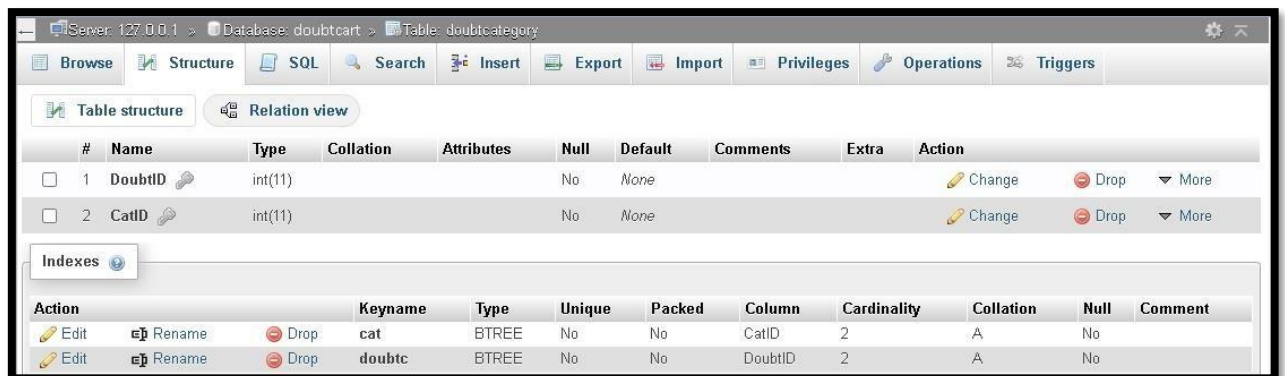
Table structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 Id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/>	2 Username	varchar(500)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/>	3 Title	varchar(1000)	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	4 Description	text	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/>	5 Point	int(11)			No	None			Change Drop More
<input type="checkbox"/>	6 IsClosed	tinyint(1)			No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	Id	1	A	No	
Edit Rename Drop	dusern	BTREE	No	No	Username	1	A	Yes	

DoubtCategory



Server: 127.0.0.1 > Database: doubtcart > Table: doubtcategory

Table structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 DoubtID	int(11)			No	None			Change Drop More
<input type="checkbox"/>	2 CatID	int(11)			No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	cat	BTREE	No	No	CatID	2	A	No	
Edit Rename Drop	doubtc	BTREE	No	No	DoubtID	2	A	No	

DoubtTags



Server: 127.0.0.1 > Database: doubtcart > Table: doubtags

Table structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 DoubtID	int(11)			No	None			Change Drop More
<input type="checkbox"/>	2 TagID	int(11)			No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	tag	BTREE	No	No	TagID	2	A	No	
Edit Rename Drop	tdoubt	BTREE	No	No	DoubtID	2	A	No	

Groups

Server: 127.0.0.1 > Database: doubtcart > Table: groups

Table structure | Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	groupname	varchar(500)	utf8mb4_general_ci		No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	groupname	3	A	No	

Resource

Server: 127.0.0.1 > Database: doubtcart > Table: resource

Table structure | Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	ResourceID	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	Title	varchar(2000)	utf8mb4_general_ci		No	None			Change Drop More
3	Description	varchar(4000)	utf8mb4_general_ci		No	None			Change Drop More
4	Semester	int(11)			No	None			Change Drop More
5	Subject	varchar(1000)	utf8mb4_general_ci		No	None			Change Drop More
6	Image	varchar(1000)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	ResourceID	18	A	No	

ResourceFiles

Server: 127.0.0.1 > Database: doubtcart > Table: resource_files

Table structure | Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	Id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	ResourceID	int(11)			No	None			Change Drop More
3	URL	varchar(500)	utf8mb4_general_ci		No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	Id	3	A	No	
Edit Rename Drop	resfile	BTREE	No	No	ResourceID	3	A	No	

Tags

Server: 127.0.0.1 > Database: doubtcart > Table: tags

Table structure | Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	Id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	Name	varchar(1000)	utf8mb4_general_ci		No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	Id	32	A	No	

User

Server: 127.0.0.1 > Database: doubtcart > Table: user										
Table structure										
#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action	
<input type="checkbox"/> 1	Username	varchar(500)	utf8mb4_general_ci		No	None			Change	Drop
<input type="checkbox"/> 2	Email	varchar(2000)	utf8mb4_general_ci		No	None			Change	Drop
<input type="checkbox"/> 3	Password	varchar(5000)	utf8mb4_general_ci		No	None			Change	Drop
<input type="checkbox"/> 4	Semester	int(11)			No	None			Change	Drop
<input type="checkbox"/> 5	Profile	varchar(1000)	utf8mb4_general_ci		Yes	NULL			Change	Drop
<input type="checkbox"/> 6	OTP	int(11)			No	None			Change	Drop
<input type="checkbox"/> 7	Points	int(11)			No	0			Change	Drop
<input type="checkbox"/> 8	warnings	int(11)			No	0			Change	Drop
<input type="checkbox"/> 9	isBlocked	tinyint(1)			No	None			Change	Drop

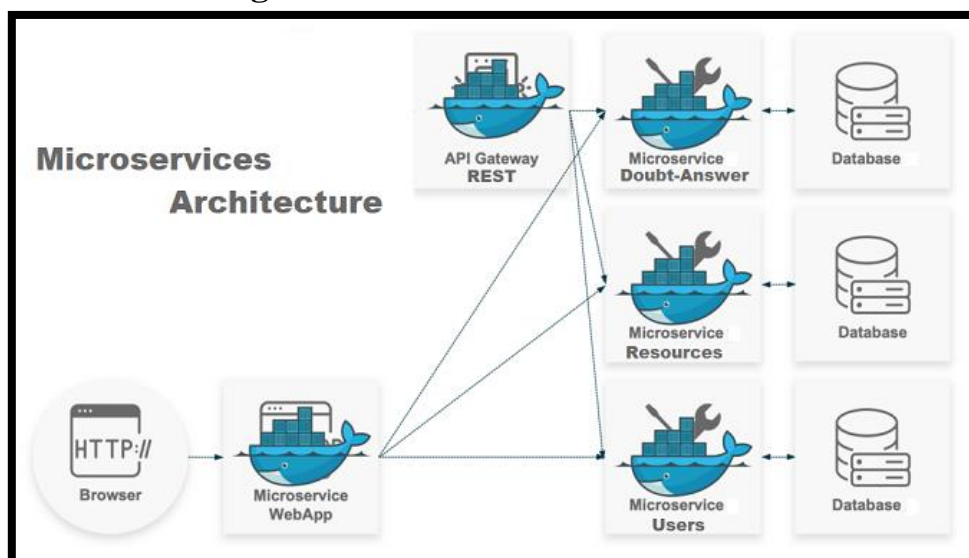
Indexes										
Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment	
<input type="checkbox"/> Edit	PRIMARY	BTREE	Yes	No	Username	3	A	No		

UserGroups

Server: 127.0.0.1 > Database: doubtcart > Table: user_groups										
Table structure										
#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action	
<input type="checkbox"/> 1	groupname	varchar(50)	utf8mb4_general_ci		No	None			Change	Drop
<input type="checkbox"/> 2	Username	varchar(500)	utf8mb4_general_ci		No	None			Change	Drop

Indexes										
Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment	
<input type="checkbox"/> Edit	guser	BTREE	No	No	Username	3	A	No		
<input type="checkbox"/> Edit	groups	BTREE	No	No	groupname	3	A	No		

6.2 Architecture Design



7. Testing

7.1 Unit Testing

This testing focuses on verification effort on the smallest unit of software design - the component or module. Using the component - level design description as a guide, important control paths are tested to uncover errors within the boundary of the module. The relative complexity of tests and the error those tests uncover is limited by constrained scope established for the unit testing. The unit testing focuses on internal processing logic and data structure with boundaries of the component. This type of testing can be conducted in parallel for multiple components.

LOGIN

No.	Description	Inputted Values		Expected Result	Actual Result	Pass / Fail
		Email ID	Password			
1.	Check for login validation	<u>admin@gmail.com</u>	admin123	Redirect to HomePage	Redirect to HomePage	Pass
2.	Check for login validation	<u>admin@gmail.com</u>	Null	Error:Please enter fields	Error:Please enter fields	Pass
3.	Check for login validation	null	Null	Error:Please enter fields	Error:Please enter fields	Pass
4.	Check for login validation	<u>admin@gmail.com</u>	Admin12	Error:Please enter small charters & any Special character	Error:Please enter small charters & any Special character	Pass

CHANGE PASSWORD

No.	Description	Inputted Values			Expected Result	Actual Result	Pass / Fail
		Old Password	New Password	Confirm Password			
1.	Check for Change password validation	admin123	admin123	admin1234	Redirect to home page	Redirect to home page	Pass
2.	Check for Change password validation	admin123	admin1234	null	Error:Please enter fields	Error:Please enter fields	Pass
3.	Check for Change password validation	null	Null	null	Error:Please enter fields	Error:Please enter fields	Pass

FORGOT PASSWORD

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Check for email validation	<u>admin@gmail.com</u>	if email is valid then user get email & then can reset password	if email is valid then user get email & then can reset password	Pass
2.	Check for email validation	<u>admin@gmail.com</u>	if email is invalid then user not can reset password	if email is invalid then user not can reset password	Pass

REGISTER

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Register new user data	Enter new user data and click Submit	Redirect to Doubts page	Redirect to Doubts page	Pass
2.	Check Register request	Click on Submit button without filling form	Enter Required field	Enter Required field	Pass

ADD DOUBT

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Add new Doubt details	Enter Doubt detail and click add	Redirect to doubtList page	Redirect to doubtList page	Pass
2.	Check add Doubt	Click on add button without filling form	Enter Required field	Enter Required field	Pass

UPDATE DOUBT

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Update Doubt details	modify Doubt detail and click update	Redirect to doubt page	Redirect to doubt page	Pass
2.	Check update Doubt	Click on update button without filling form	Enter Required field	Enter Required field	Pass

DOUBT CLOSED

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Close a doubt	Enter Doubt Answer detail and click close	Redirect to doubtList page	Redirect to doubtList page	Pass
2.	Check close Doubt	Click on close button without filling form	Enter Required field	Enter Required field	Pass

SEARCH DOUBT BY TITLE

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Search Doubt by title details	Enter Doubt title and click search	Show searched doubt List	Show searched doubt List	Pass
2.	Check search Doubt	Click on search button without filling form	Enter Required field	Enter Required field	Pass

ADD ANSWER

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Add new Answer details	Enter Answer detail and click add	Redirect to Doubt Answer page	Redirect to Doubt Answer page	Pass
2.	Check add Answer	Click on add button without filling form	Enter Required field	Enter Required field	Pass

UPDATE ANSWER

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Update Answer details	modify Answer detail and click update	Redirect to Doubt Answer page	Redirect to Doubt Answer page	Pass
2.	Check update Answer	Click on update button without filling form	Enter Required field	Enter Required field	Pass

LIST ANSWER BY DOUBT

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Search Answer by doubt details	Enter Doubt detail and click search	Redirect to Doubt Answer page	Redirect to Doubt Answer page	Pass
2.	Check search Answer	Click on search button without filling form	Enter Required field	Enter Required field	Pass

ADD RESOURCE

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Add new Resource details	Enter Resource detail and click add	Redirect to ResourceList page	Redirect to ResourceList page	Pass
2.	Check add Resource	Click on add button without filling form	Enter Required field	Enter Required field	Pass

UPDATE RESOURCE

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	update Resource details	modify Resource detail and click update	Redirect to ResourceList page	Redirect to ResourceList page	Pass
2.	Check update Resource data	Click on update button without filling form	Enter Required field	Enter Required field	Pass

SAVE RESOURCE

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Save Resource details	add Resource files and click add	Redirect to ResourceList page	Redirect to ResourceList page	Pass
2.	Check save Resource data	Click on add button without filling form	Enter Required field	Enter Required field	Pass

COMMENT RESOURCE

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Comment on a Resource	add comment on a Resource and click add	Redirect to Resource page	Redirect to Resource page	Pass
2.	Check comment button	Click on add button without filling form	Enter Required field	Enter Required field	Pass

COMMENTS BY RESOURCE

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Search Comment by Resource detail	enter Resource detail and click search	Redirect to Resource comment page	Redirect to Resource comment page	Pass
2.	Check search button	Click on search button without filling form	Enter Required field	Enter Required field	Pass

COUNT COMMENTS

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Count total comments	Comment details	Return Total number of comments	Return Total number of comments	Pass
2.	If no comments	No comment details without filling form	No comments yet message will be displayed	No comments yet message will be displayed	Pass

SAVE PROFILE

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Add Profile Image	enter user profile data and clicks save	Redirect to User Profile	Redirect to User Profile	Pass
2.	Check save profile button	Click on save button without filling form	Enter Required field	Enter Required field	Pass

SEARCH RESOURCE BY TITLE AND SUBJECT

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Search Resource details by title and subject	Enter title and subject data and click search	Show result of ResourceList	Show result of ResourceList	Pass
2.	Check search Resource by title and subject	Click on search button without filling form	Enter Required field	Enter Required field	Pass

SEARCH RESOURCE BY SEMESTER

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Search Resource details semester	Enter semester detail and click search	Show result of ResourceList	Show result of ResourceList	Pass
2.	Check search Resource by semester	Click on search button without filling form	Enter Required field	Enter Required field	Pass

SEARCH RESOURCE BY SUBJECT

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Search Resource details subject	Enter subject detail and click search	Show result of ResourceList	Show result of ResourceList	Pass
2.	Check search Resource by subject	Click on search button without filling form	Enter Required field	Enter Required field	Pass

SEARCH RESOURCE FILES BY RESOURCE

No.	Description	Inputted Values	Expected Result	Actual Result	Pass / Fail
1.	Search Resource files by resource detail	Enter resource detail and click search	Show result of Resource Files List	Show result of Resource Files List	Pass
2.	Check search Resource files by resource	Click on search button without filling form	Enter Required field	Enter Required field	Pass

7.2 Integration Testing

Integration testing is a systematic technique for constructing the software architecture while at the same time conducting tests to uncover errors associated with interfacing. The objective is to take unit tested components and build a program structure that has been dictated by design.

- **Top-down Integration :**

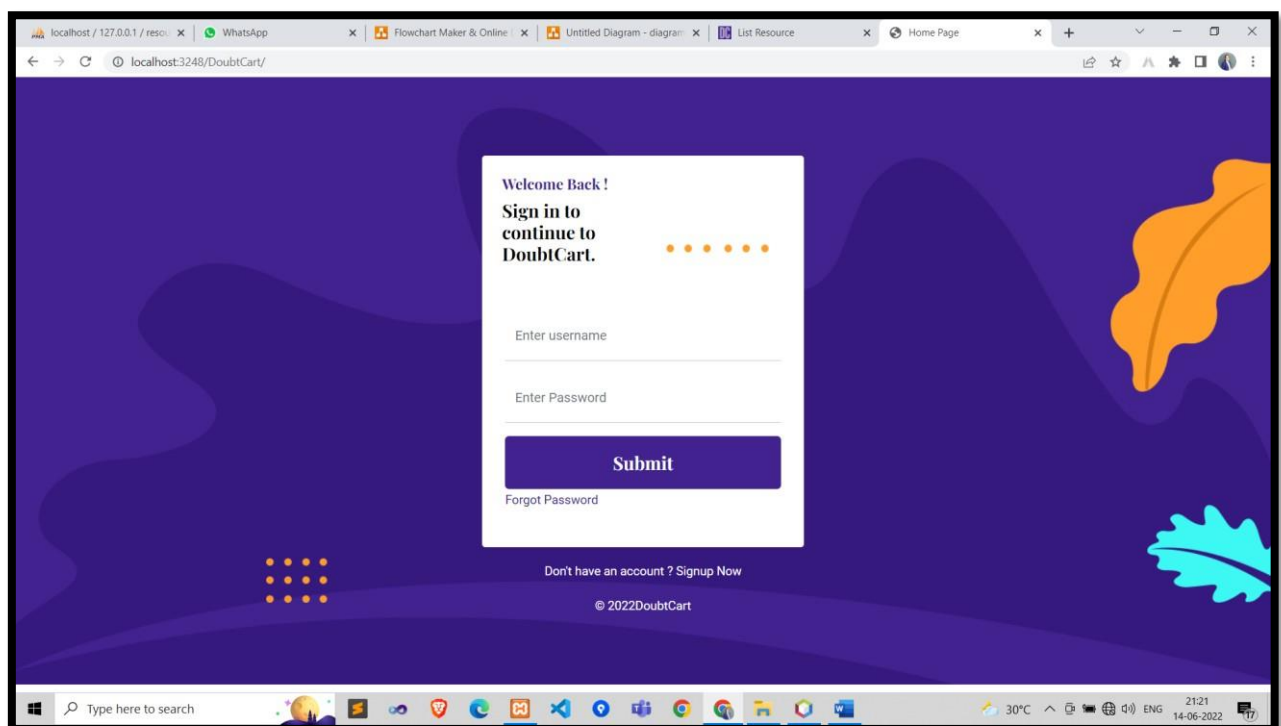
It is an incremental approach to construction of the software architecture. Modules are integrated by moving downward through the control hierarchy, beginning with the main control module.

- **Bottom-up Integration ;**

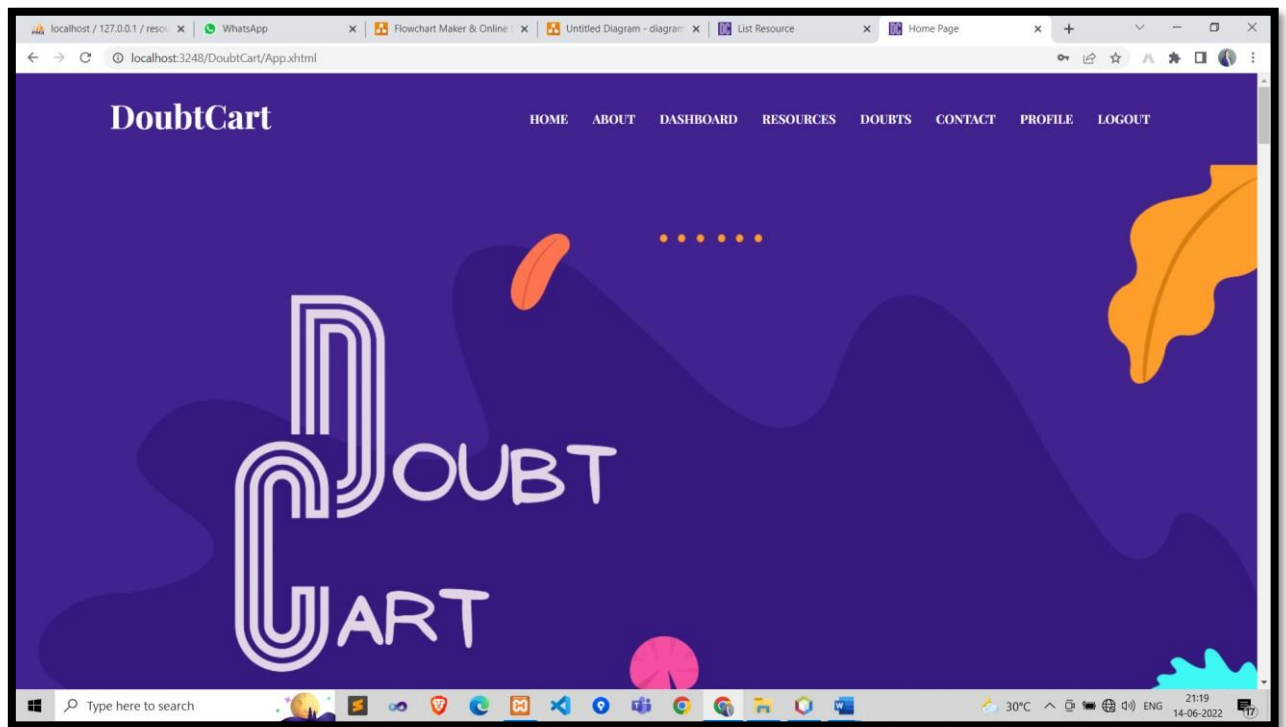
It begins construction and testing with atomic modules. Because components are integrated from the bottom up, processing required for components subordinate to a given level is always available and the need for stubs is eliminated.

8 Interface Design sitemap followed with page snapshots

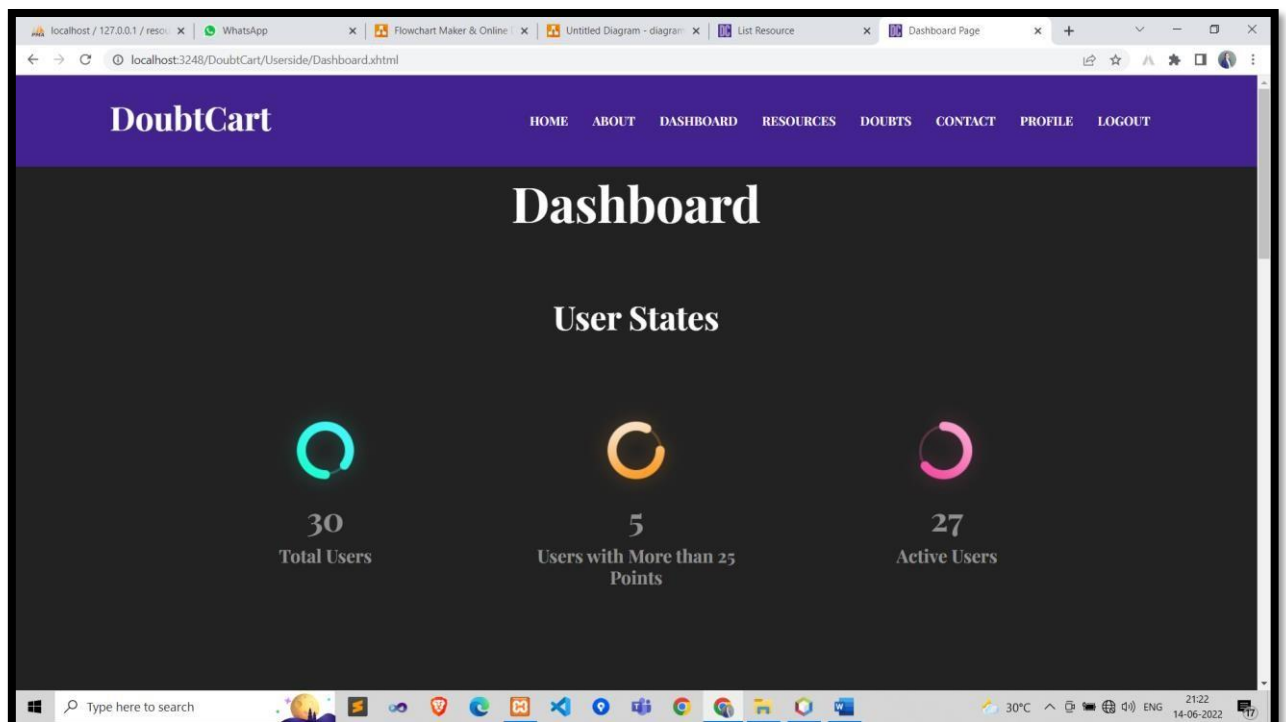
Login Page



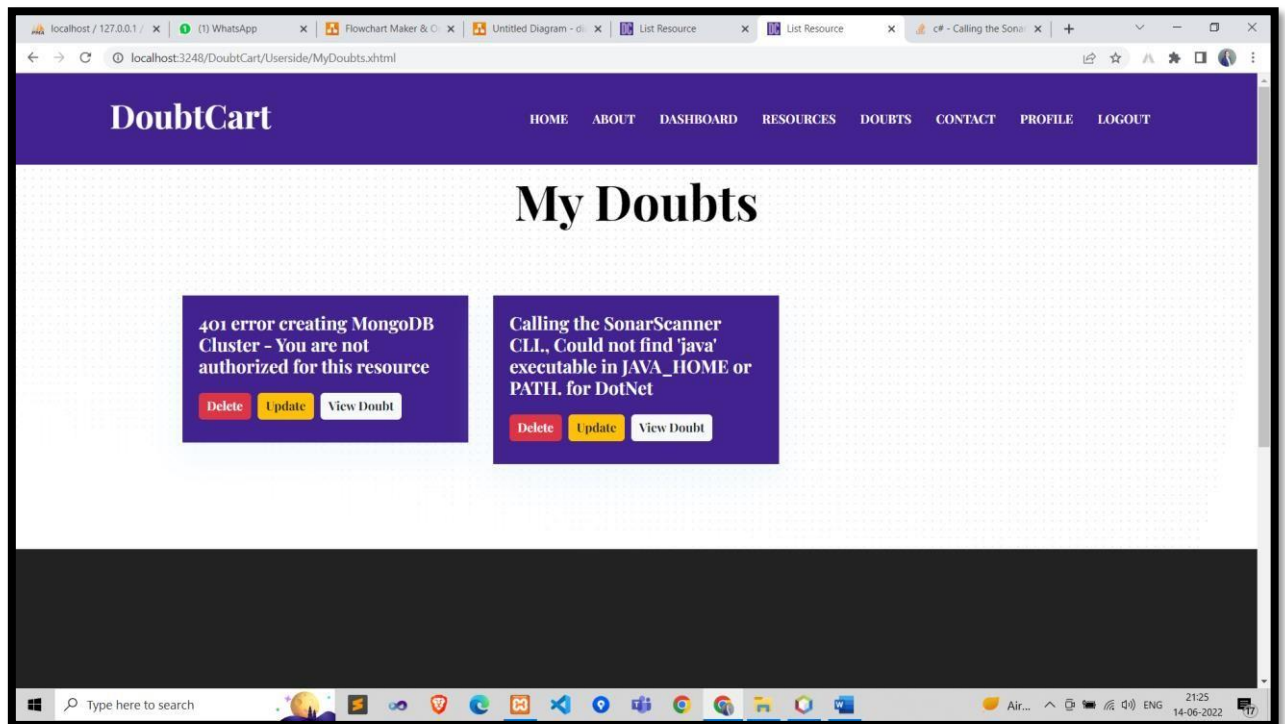
Home Page



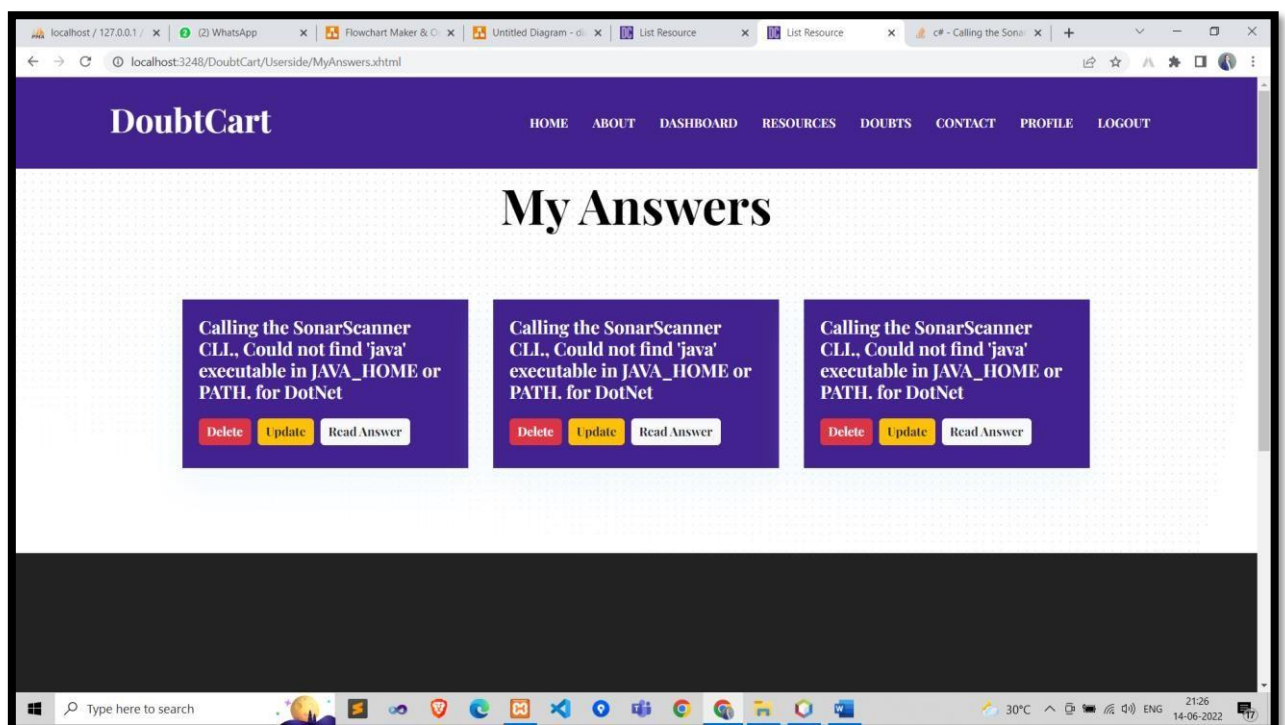
Dashboard



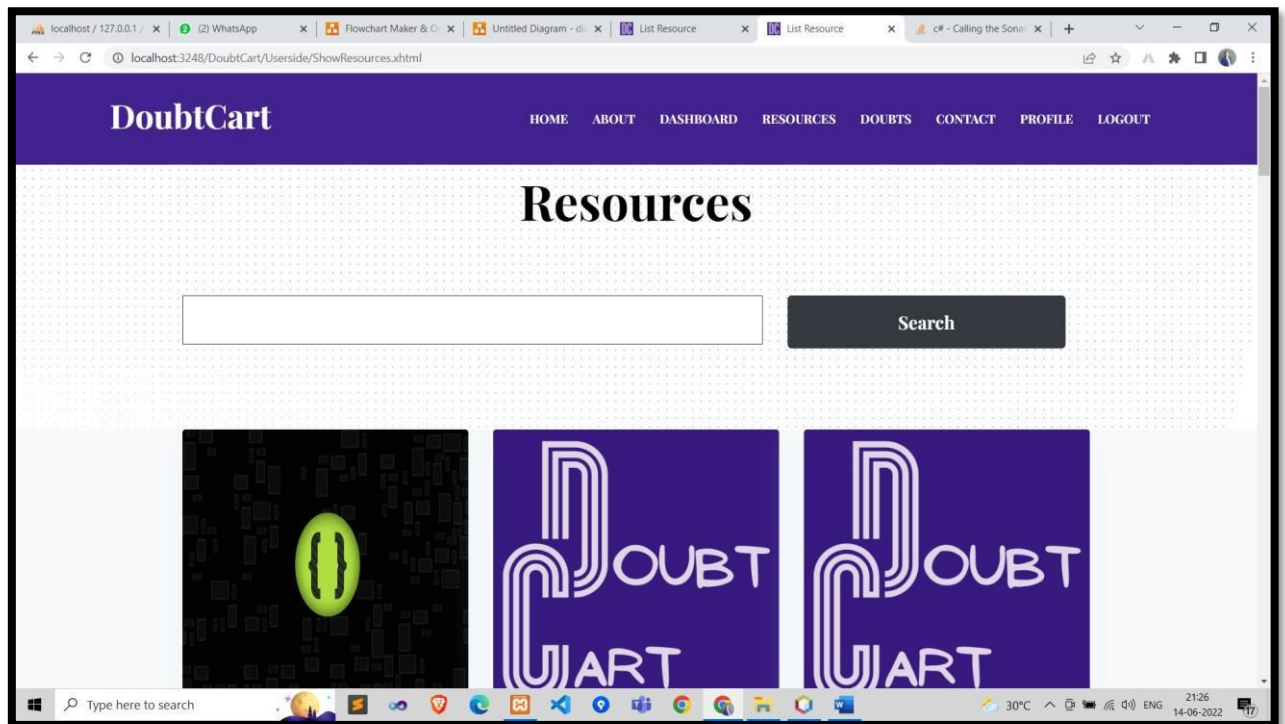
My Doubts



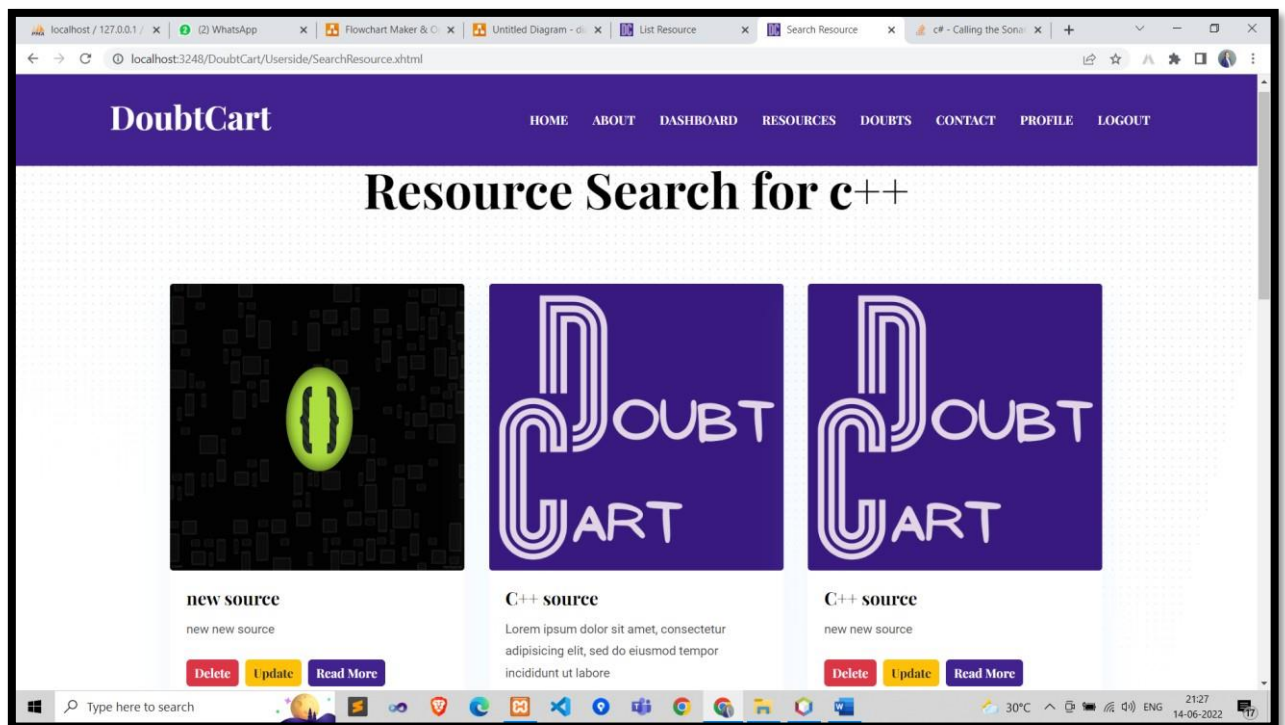
My Answers



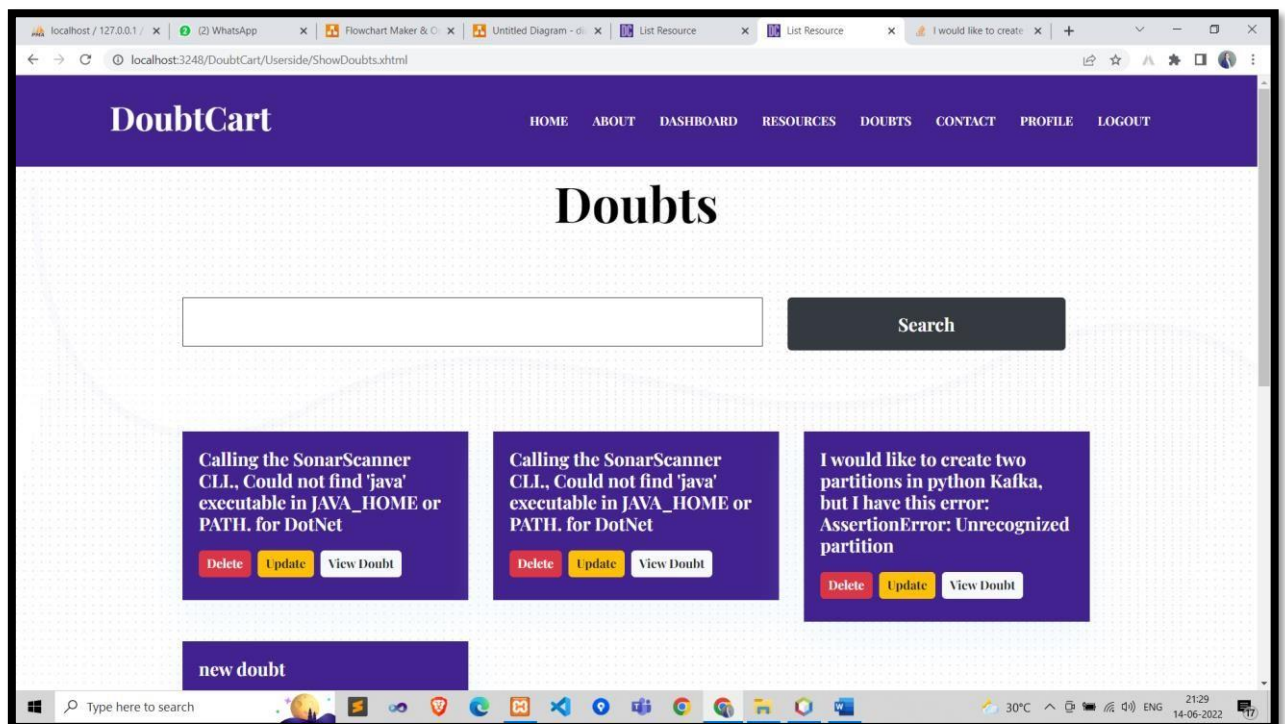
Resource List



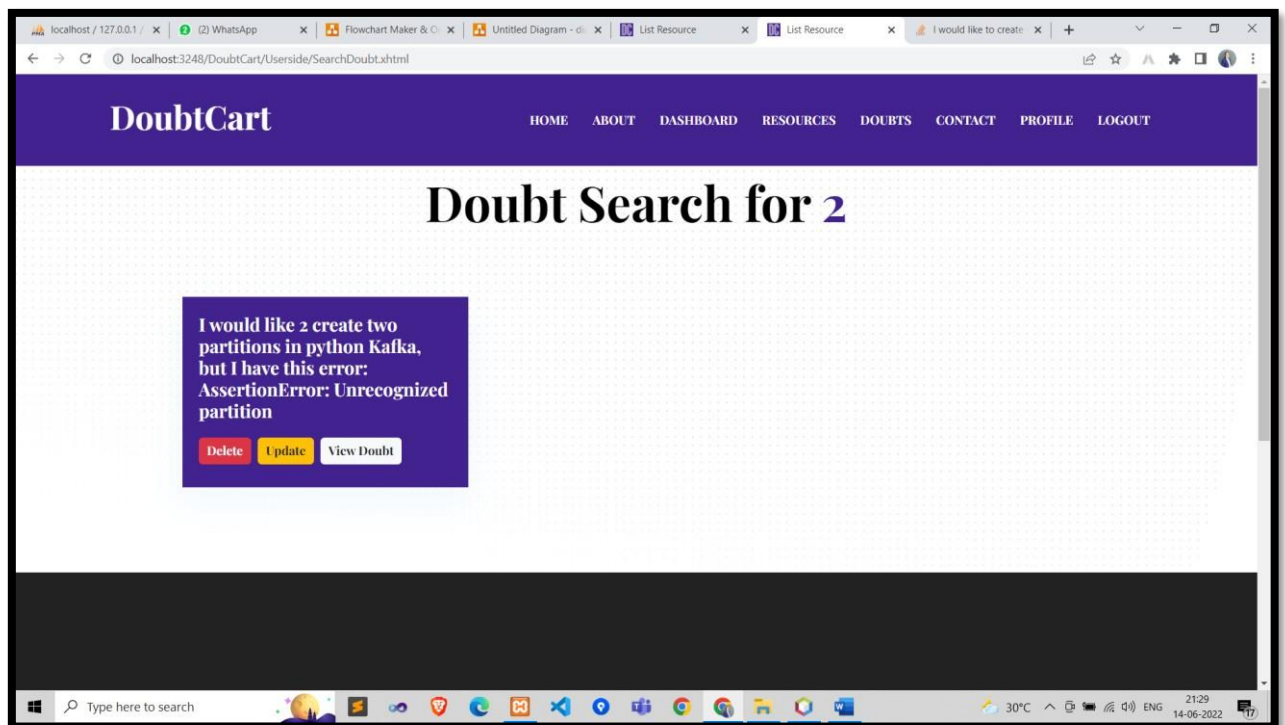
Search Resource



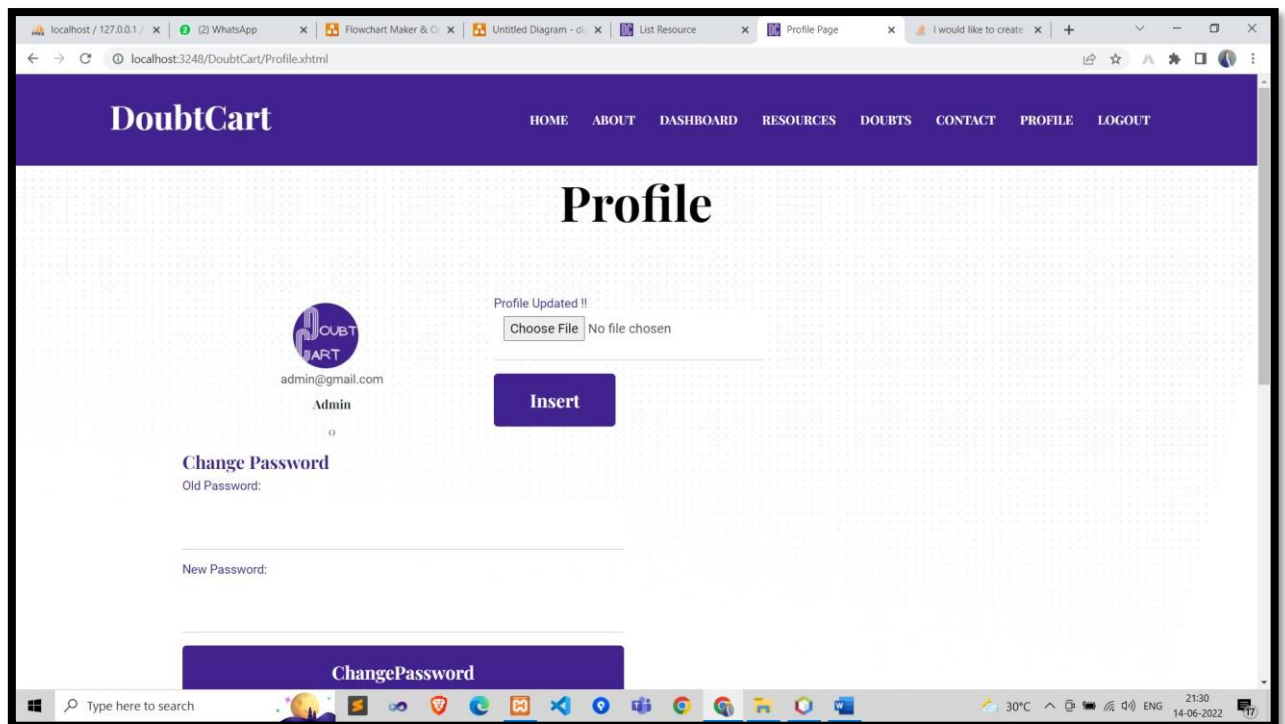
Doubt List



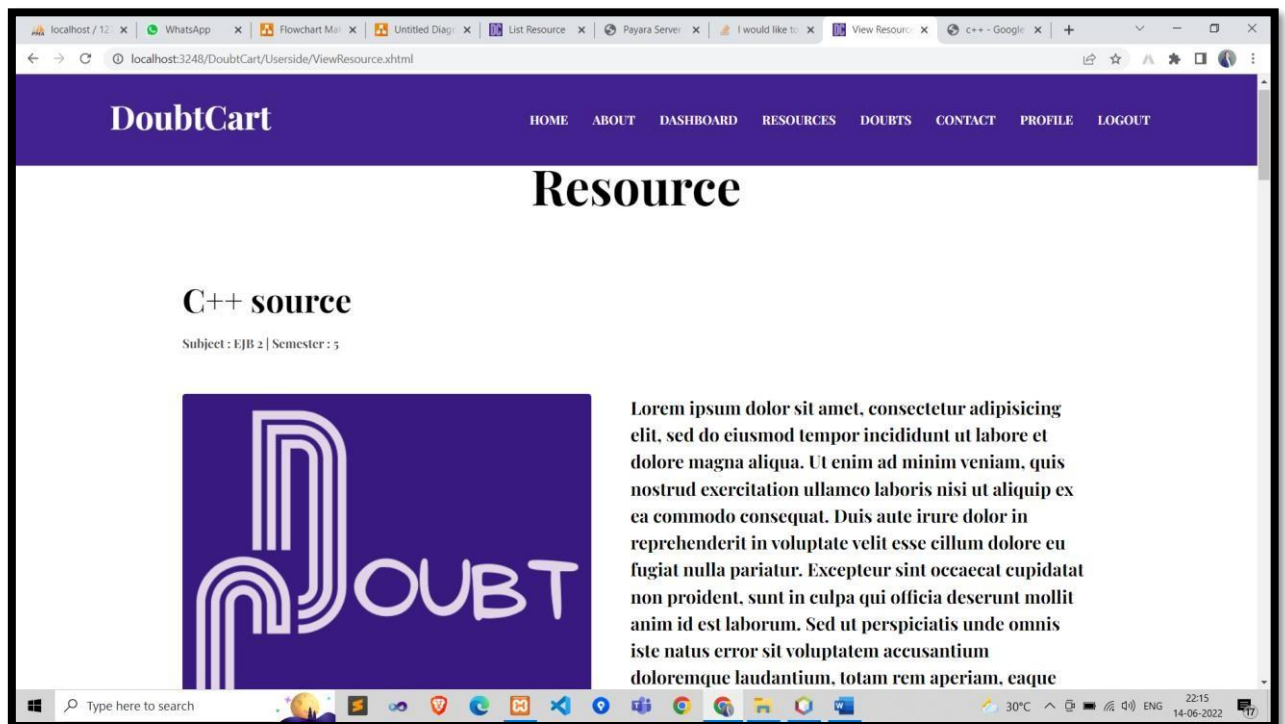
Doubt Search



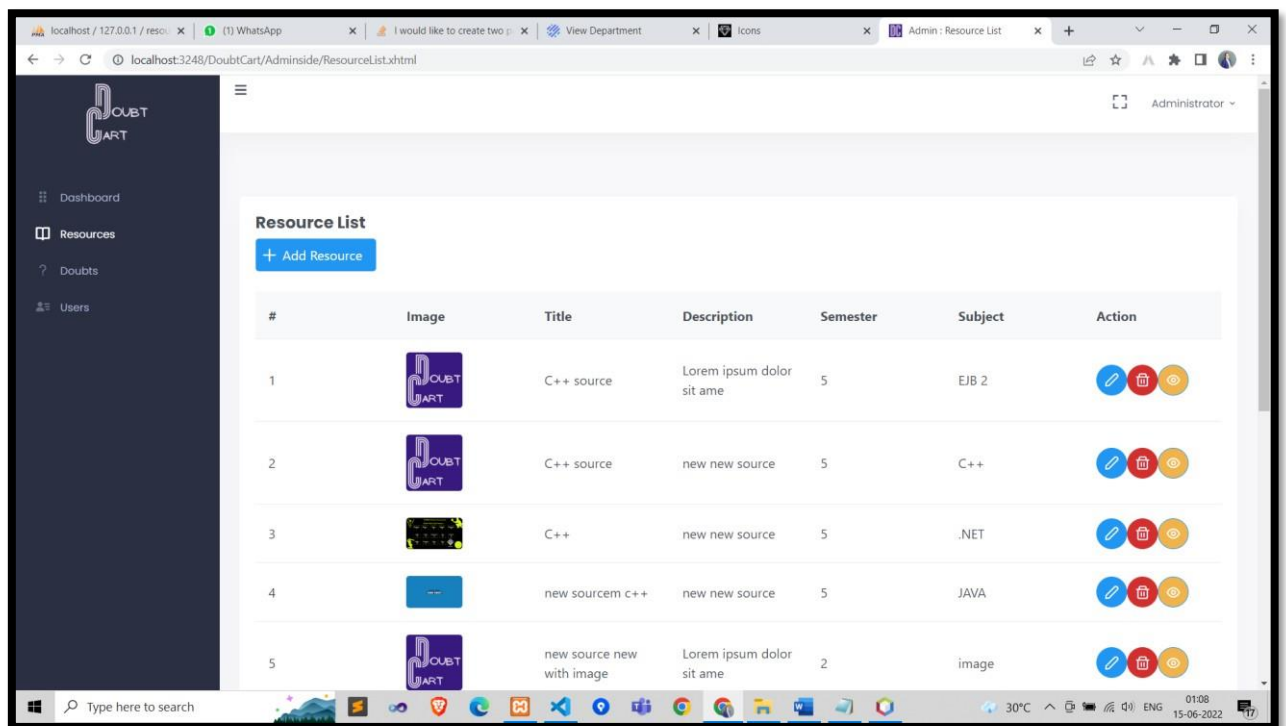
Login User Profile



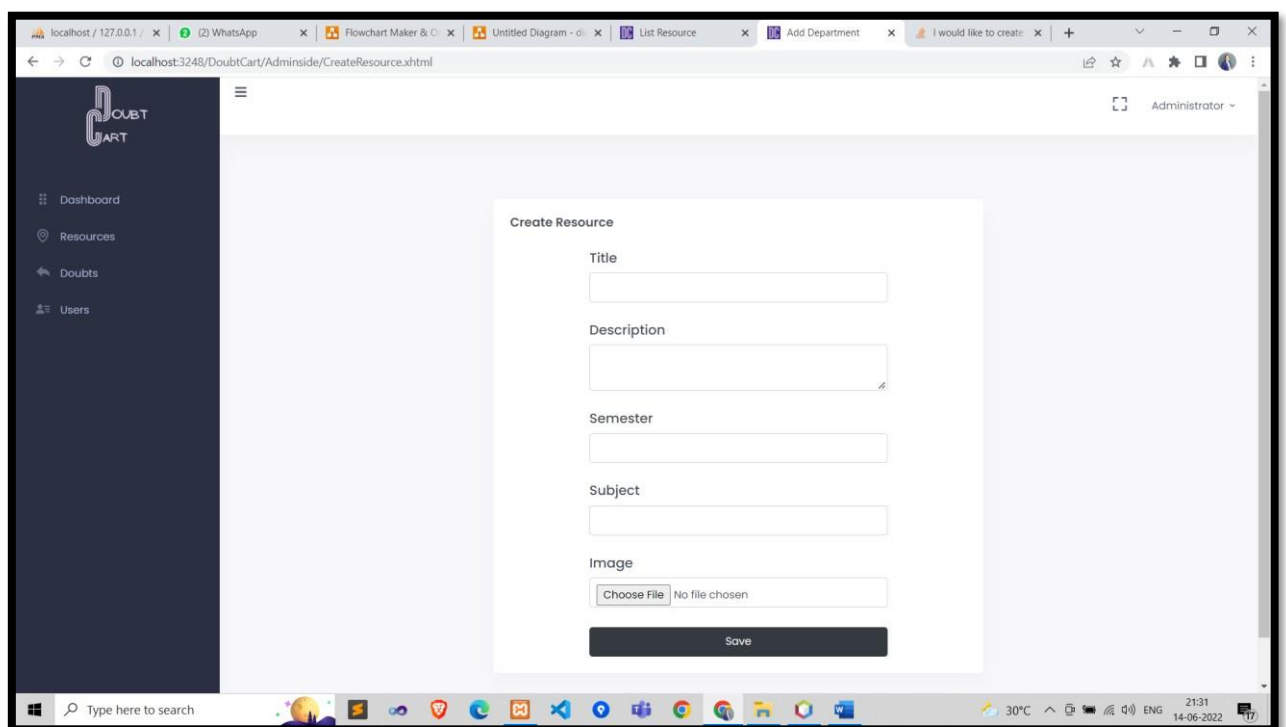
Read Resource



AdminPanel : ResourceList



AdminPanel :Create Reource



AdminPanel : Update Resource




The screenshot shows the 'Update Resource' form in the AdminPanel. The form is located at `localhost:3248/DoubtCart/Adminside/UpdateResource.xhtml`. It has a sidebar with links to Dashboard, Resources, Doubts, and Users. The form fields are:

- Title: C++ source
- Description: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.
- Semester: 5
- Subject: EJB 2
- Image: Choose File (No file chosen)
- Save: Save
- Add Resource Files: Choose File (No file chosen)
- Save File: Save File

The bottom of the screen shows a Windows taskbar with various application icons and a system tray with the date 15-06-2022 and time 01:09.

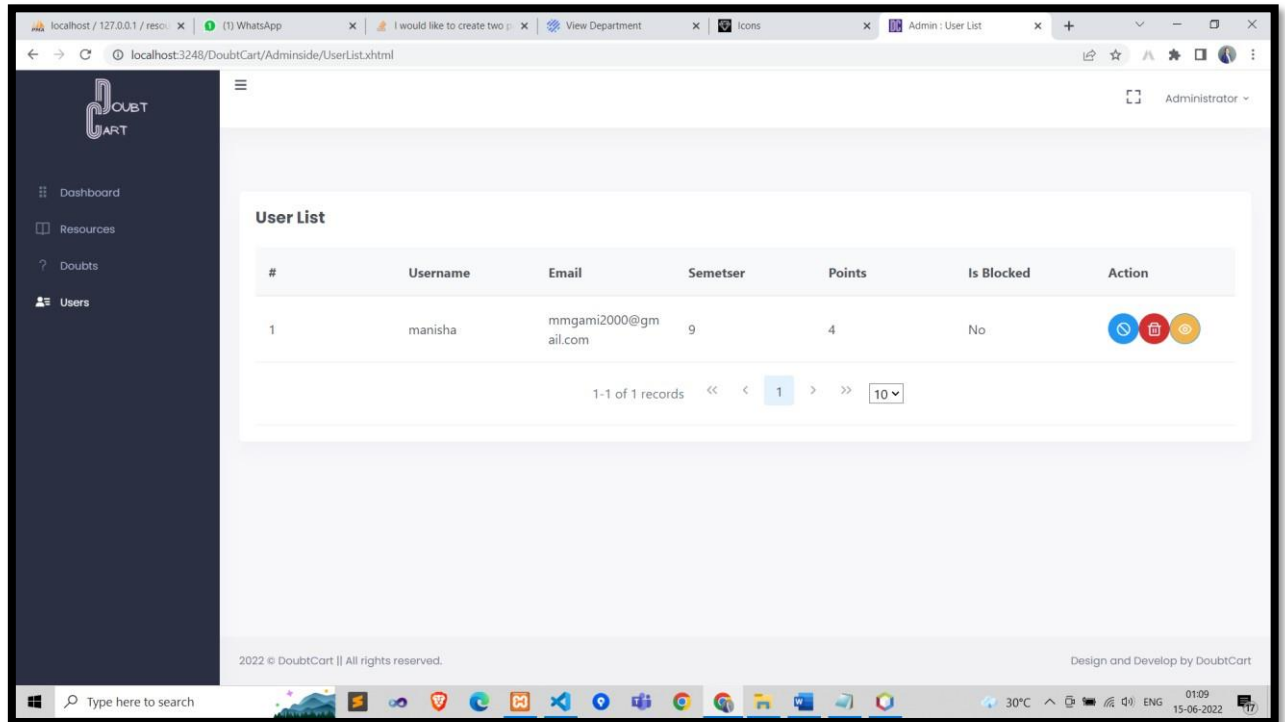
AdminPanel : Doubt List

The screenshot shows the 'Doubt List' table in the AdminPanel. The table is located at `localhost:3248/DoubtCart/Adminside/DoubtList.xhtml`. It has a sidebar with links to Dashboard, Resources, Doubts, and Users. The table has the following columns: #, Title, Description, Username, Points, Is Solved, and Action. The data rows are:

#	Title	Description	Username	Points	Is Solved	Action
1	2jh	<p> 				
2	new doubt	,dshfkjhg	admin		No	 

The bottom of the screen shows a Windows taskbar with various application icons and a system tray with the date 15-06-2022 and time 01:09.

AdminPanel : UserList



9 Future Enhancement

- **Moderator** : To Manage site on Large Scale Trusted Users will be Promoted As moderator and then they can Manage some of Admin Task.
- **User Communication Within the System** : Students Should be able to communicate with each other within the system.
- **Levels And Badges**: Students will be Rewarded by Badges on Clearing Some Level of Doubt Solution Points.
- **Like Resources and Doubts** : Students can vote Likes to resources and doubts which will help students to find popular resources and doubts.

10 Reference

-  <https://docs.oracle.com/javaee/6/tutorial/doc/gijsz.html>
-  <https://www.primefaces.org>
-  <https://hub.docker.com/>
-  <https://stackoverflow.com/>  <https://jwt.io/introduction>