

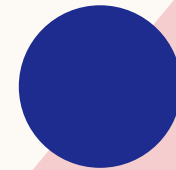
# **DEGREE VERIFICATION SYSTEM USING BLOCKCHAIN**

GROUP MEMBERS:

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**RABYA ESSANI(02-131192-081)**

# AGENDA

- Problem statement
- Problem solution
- Software process model
- Gantt chart
- Specific requirements
- Functional requirements
- Workflow
- Work Breakdown Structure
- Use case
- Sequence diagram
- System Architecture design
- Chosen System Architecture
- Screen images



# PROBLEM STATEMENT

- One issue with the current degree verification process is that a student must have their certificates at each stage of validation, which increases the risk of losing or damaging them.
- It can also be time-consuming for the person responsible for validation to authenticate each degree.
- There are many agencies operating secretly in our country that are involved in creating fake degrees for Students so, it can be difficult and time-consuming to distinguish between a fake and an original certificate.

# PROBLEM SOLUTION

- Blockchain technology offers a solution to these issues. Data in a blockchain cannot be changed under normal circumstances and any tampering can be quickly detected, data or nodes are only validated when multiple parties approve them, making the system reliable and authenticated at all times.
- The system we propose will not only validate certificates but also generate them, saving time and eliminating the need for students to worry about losing or damaging physical certificates.

# SOFTWARE PROCESS MODEL

- In this project, we will be using the agile development methodology and specifically the Kanban approach to manage and track our progress. We will use visual aids, such as a Kanban board, to understand the status of the project and identify any issues or bottlenecks.
- We also use Jira software to depict our progress and to collaborate with team members. In addition to the Kanban board, we will also use cumulative frequency diagrams to help us understand the project's situation and make informed decisions.
- One of the key benefits of using Kanban is that it allows us to be flexible and responsive to changes. We can deliver increments of the project at any time and are always open to new ideas or modifications from the client.



Jira Software Your work ▾ Projects ▾ Filters ▾ Dashboards ▾ People ▾ Apps ▾ Create

Search

Projects / Degree Verification System Using BlockChain

### KanBan DVBSUB

We have to complete The High Fidelity Design In Figma To accomplish Our Goal

Q Search AW RE SK

Epic ▾ Type ▾

GROUP BY None ▾ Insights

BACKLOG 1 ISSUE

Details Of Course

RESEARCH AND DEVELOPMENT

✓ DVSUB-4

TO DO 5 ISSUES

As a Verifier I want to upload document so that I upload the received degree of student for verification.

USER INTERFACE SCREENS AND SY...

DVSUB-17 RE

Create An Archicture Diagram Of System Behaviour

USER INTERFACE SCREENS AND SY...

✓ DVSUB-28 RE

Write Introduction of the Report part

FYP REPORT

IN PROGRESS 2 ISSUES

Design A Figma Home Page For Verifier

USER INTERFACE SCREENS AND SY...

DVSUB-5 RE

CREATE SOFTWARE PROJECT MANAGEMENT PLAN Report Part

FYP REPORT

✓ DVSUB-30 AW

QA /REVIEW

DONE 10 ISSUES ✓

Research for Home Page

RESEARCH AND DEVELOPMENT

✓ DVSUB-3 ✓ AW

Research For Creative Home Page

RESEARCH AND DEVELOPMENT

✓ DVSUB-1 ✓ RE

Our products

AW

RE

SK

AW

# GANTT CHART

		Task Mode	Task Name	Duration	Start	Finish	Predecessor	Resource Names
1			▫ Degree Verification System	147 days	Thu 10/13/22 8	Fri 5/5/23 5:00 PM		
2			▫ Initiating	22 days	Thu 10/13/22 8	Fri 11/11/22 5:00 PM		
3			Research About Idea	2 wks	Thu 10/13/22 8	Wed 10/26/22 5:00 PM		Adil Waheed, Rabya Essani, Sumayya Khalid
4			Discussion With Teachers	1 wk	Thu 10/27/22 8	Wed 11/2/22 5:00 PM	3	Adil Waheed, Rabya Essani, Sumayya Khalid
5			Initial Proposal Defence	1 wk	Thu 11/3/22 8	Wed 11/9/22 5:00 PM	4	Adil Waheed, Rabya Essani, Sumayya Khalid
6			Project Charter	2 days	Thu 11/10/22 8	Fri 11/11/22 5:00 PM	5	Rabya Essani
7			▫ Planning	70 days	Mon 11/14/22 8	Fri 2/17/23 5:00 PM	2	
8			▫ Designing	30 days	Mon 11/14/22 8	Fri 12/23/22 5:00 PM		
9			Design UI/Ux	3 wks	Mon 11/14/22 8	Fri 12/2/22 5:00 PM		Sumayya Khalid
10			Design Scheme	3 wks	Mon 12/5/22 8	Fri 12/23/22 5:00 PM	9	Rabya Essani
11			Learning Technology	8 wks	Mon 12/26/22 8	Fri 2/17/23 5:00 PM		Adil Waheed, Rabya Essani, Sumayya Khalid
12			▫ Executing	50 days	Mon 2/20/23 8	Fri 4/28/23 5:00 PM	7	
13			Developing UI/UX	2 wks	Mon 2/20/23 8	Fri 3/3/23 5:00 PM		Rabya Essani, Sumayya Khalid
14			Development	6 wks	Mon 3/6/23 8	Fri 4/14/23 5:00 PM	13	Adil Waheed, Rabya Essani, Sumayya Khalid
15			Testing	2 wks	Mon 4/17/23 8	Fri 4/28/23 5:00 PM	14	Adil Waheed, Rabya Essani, Sumayya Khalid
16			▫ Closing	5 days	Mon 5/1/23 8	Fri 5/5/23 5:00 PM	12	
17			Final Presentation	5 days	Mon 5/1/23 8	Fri 5/5/23 5:00 PM		Adil Waheed, Rabya Essani, Sumayya Khalid

# SPECIFIC REQUIREMENTS

1. The institution is able to issue degrees on the Web application.
2. The web application can generate a pdf with a QR code and Unique ID attached to the document uploaded by the institution.
3. The web application is able to send that document to IPFS to create a hash.
4. IPFS returns a hash of the document to the system, further system can store the hash and Unique ID on the blockchain.
5. The system can mail E-document to students.
6. Students can access and share their credentials with potential employers and other organizations.
7. Organizations can verify documents in either of the 3 ways mentioned below:
  - Upload Document pdf
  - Scan QR-code
  - Enter Unique ID
8. Website should be available 24/7.



# FUNCTIONAL REQUIREMENTS

**1. Secure and tamper-proof storage of degree information:**

Blockchain technology uses cryptography to secure the data and ensures that once data is recorded on the blockchain it cannot be altered, this ensures the secure and tamper-proof storage of degree information.

**2. Verification and Validation:**

The system must be able to verify and validate the authenticity of degree information and the identity of the person presenting it.

**3. Encryption and digital signature:**

The system must be able to encrypt and digitally sign the degree information before it is added to the blockchain, in order to ensure the security of the data.

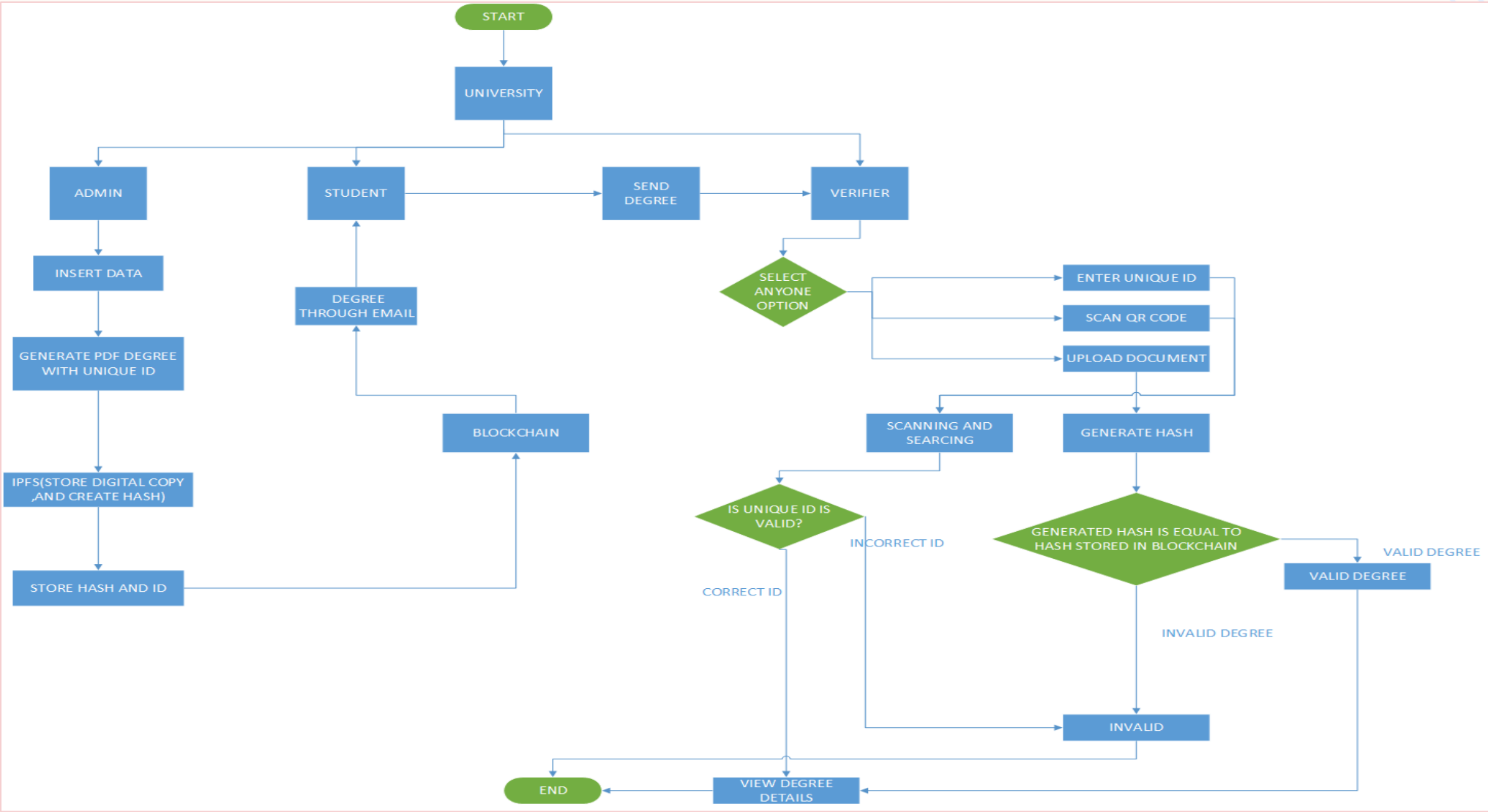
**4. Searching and retrieving:**

The system must allow to search and retrieval of specific degree information and provide data in a format that can be easily understood by end users.

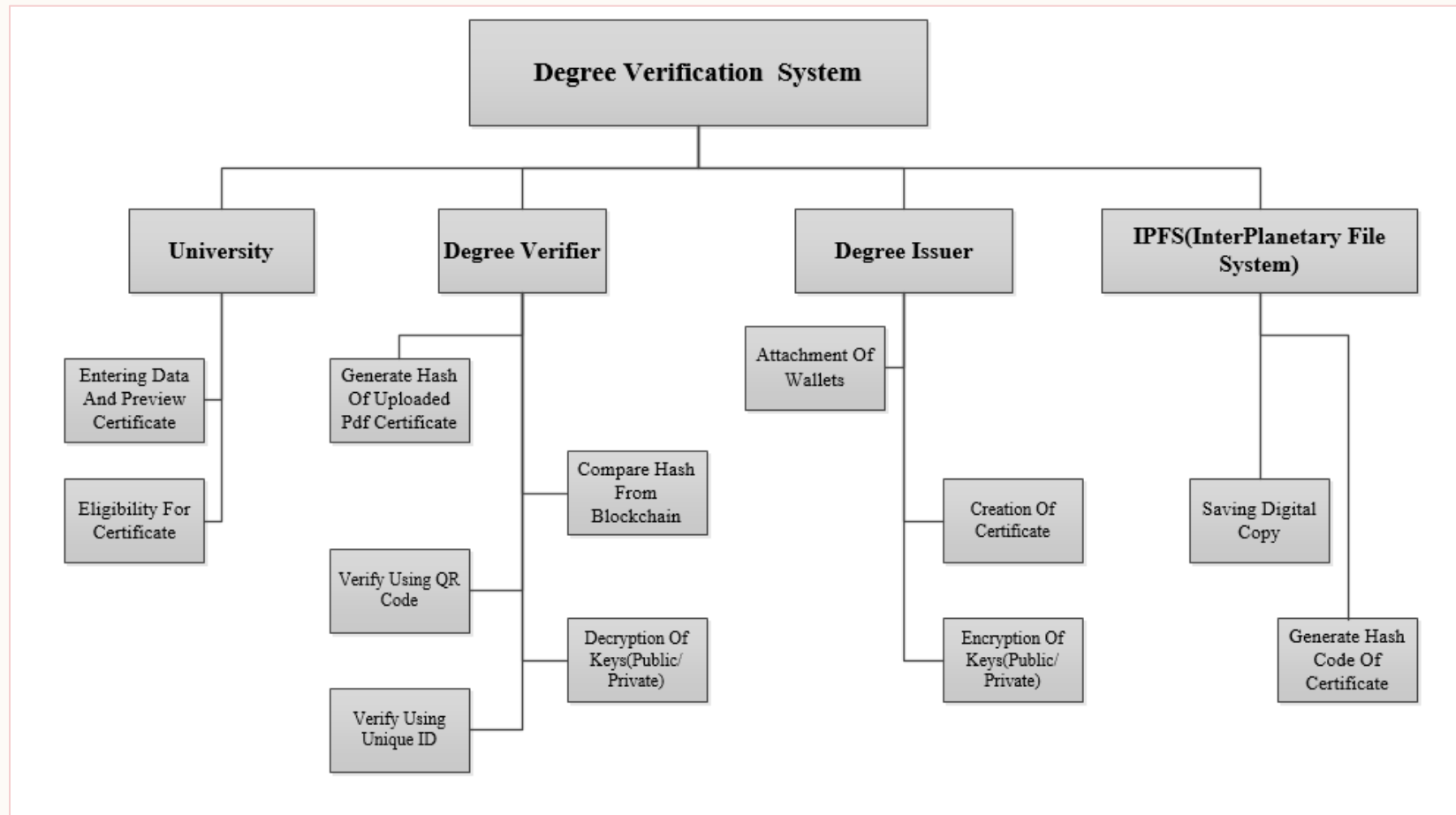
**5. Smart contract execution:**

The system must be able to execute smart contracts that are used to automate the verification process and ensure that all requirements are met before the degree is verified and added to the blockchain.

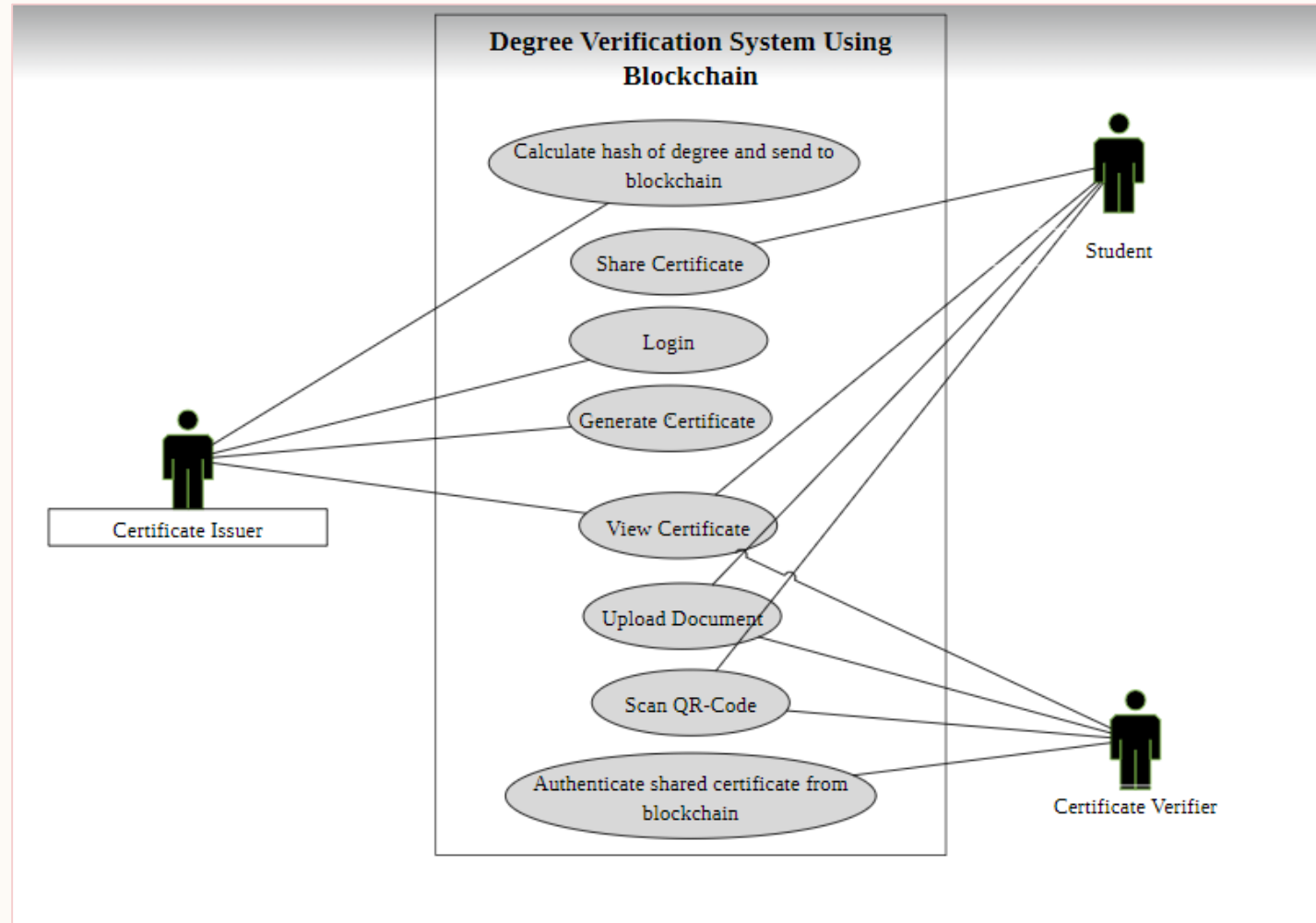
# WORK FLOW:



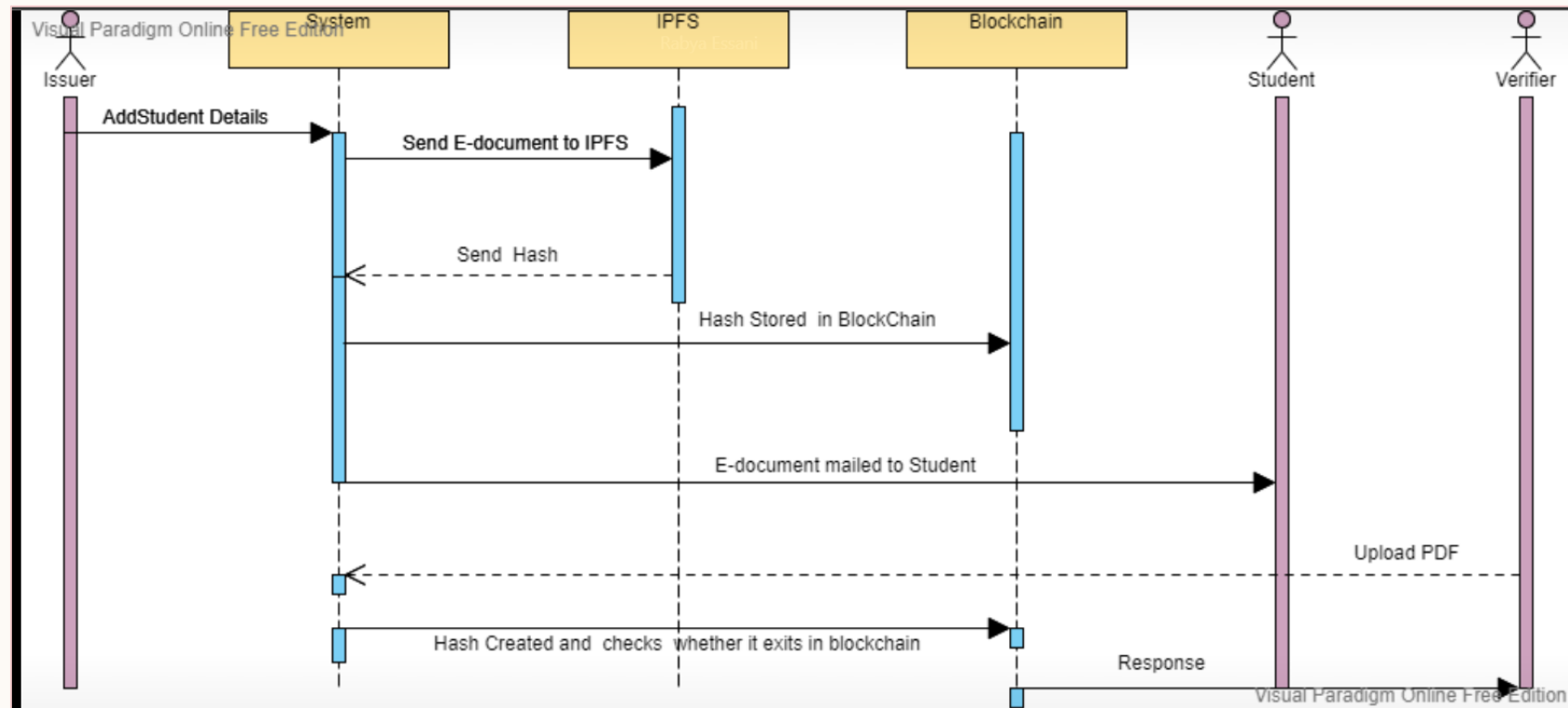
# WORK BREAKDOWN STRUCTURE



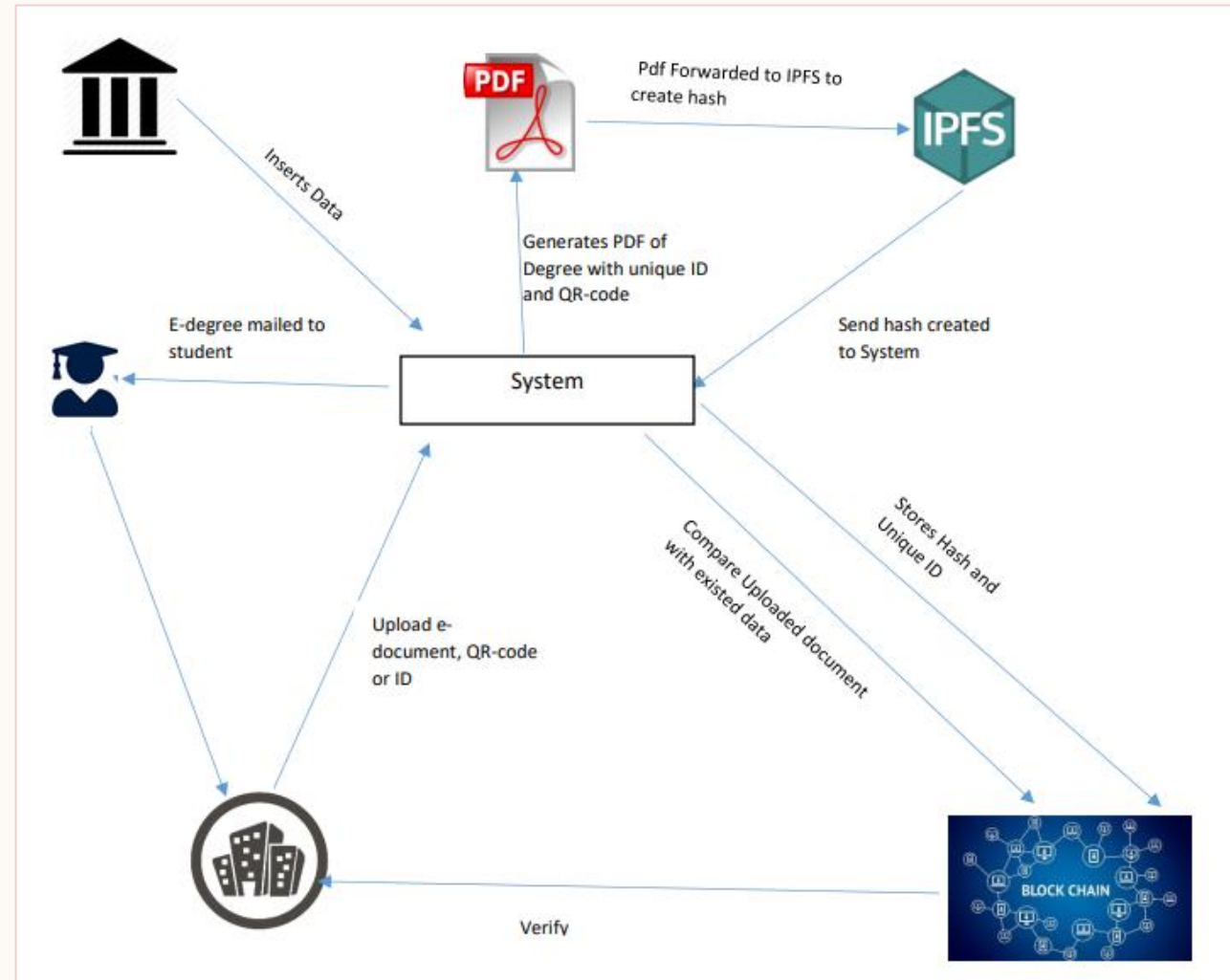
# USE CASE



# SEQUENCE DIAGRAM



# SYSTEM ARCHITECTURAL DESIGN



# CHOSEN SYSTEM ARCHITECTURE

- The University Degree Issuer would use a web application to enter student information, which would be used to create an electronic degree (E-degree).
- The E-degree would then be sent to the issuer for confirmation, and once confirmed, a QR code would be generated.
- The E-degree would then be sent to IPFS to generate a hash, which would be sent back to the system and added to the blockchain for storage.
- The E-degree would then be emailed to the student. The student could then forward the E-degree to any organization for verification.
- The verifier would have the option to scan the QR code, enter a unique ID, or upload the E-degree.
- The QR code or unique ID would be checked against the blockchain to confirm the authenticity of the degree.
- The verifier could also upload the E-degree and compare the hash of the document to the one stored on the blockchain to confirm the authenticity of the degree.

# SCREEN IMAGES

<https://www.figma.com/proto/ZjVgWB9zke7voiF7QRI04t/Desgin-Home-Page?node-id=365%3A603&scaling=min-zoom&page-id=365%3A209&starting-point-node-id=365%3A603&show-proto-sidebar=1>



# • ADMIN MODULE

## Admin Panel

### LOG IN

Login

Degree Verification System ©

## Admin Panel

### Verify Your Email

We Have Send A Verification Code To  
Your email adil\*\*\*\*\*@gmail.com

Verify

Degree Verification System ©

## Admin Panel

LogOut

### Student Certificate Detail

First Name

Last Name

Father Name

Enrollment Number

Register Number

Program

Batch #

Date Of Graduation

CGPA

Preview And Add

**Degree Verification System ©**

## UNIVERSITY OF BAHRIA



BAHRIA UNIVERSITY AND FACULTY OF UNIVERSITY HAVE GRANTED TO

**ALI MURTAZA**

**BACHELORS OF SOFTWARE ENGINEERING**

CGPA:3.5

WITH ALL THE RIGHTS AND PRIVILIGES THERE TO

11/02/2023

Date Of Issue



SIGNATURE

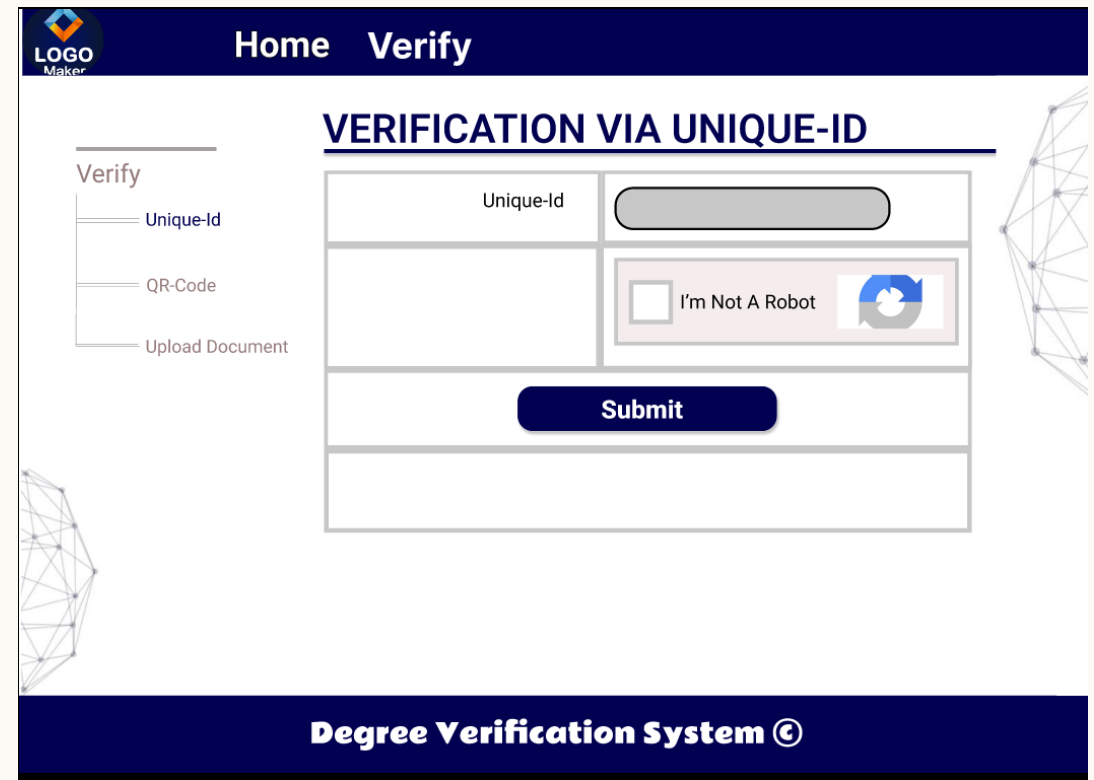
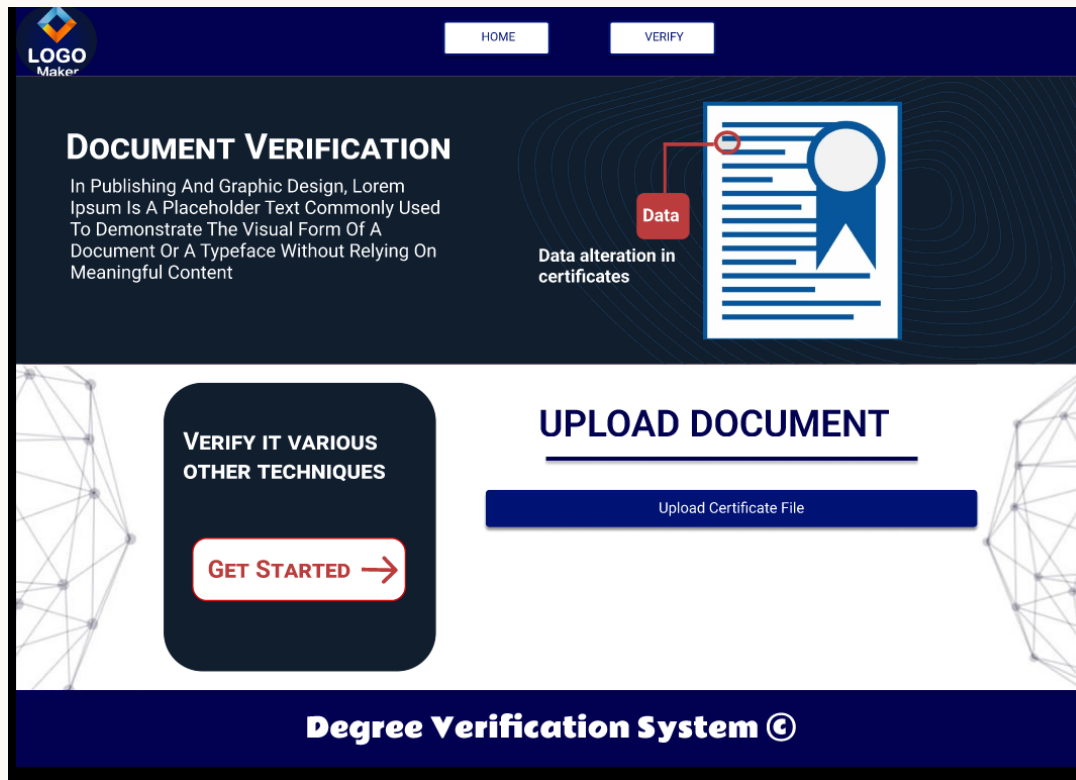


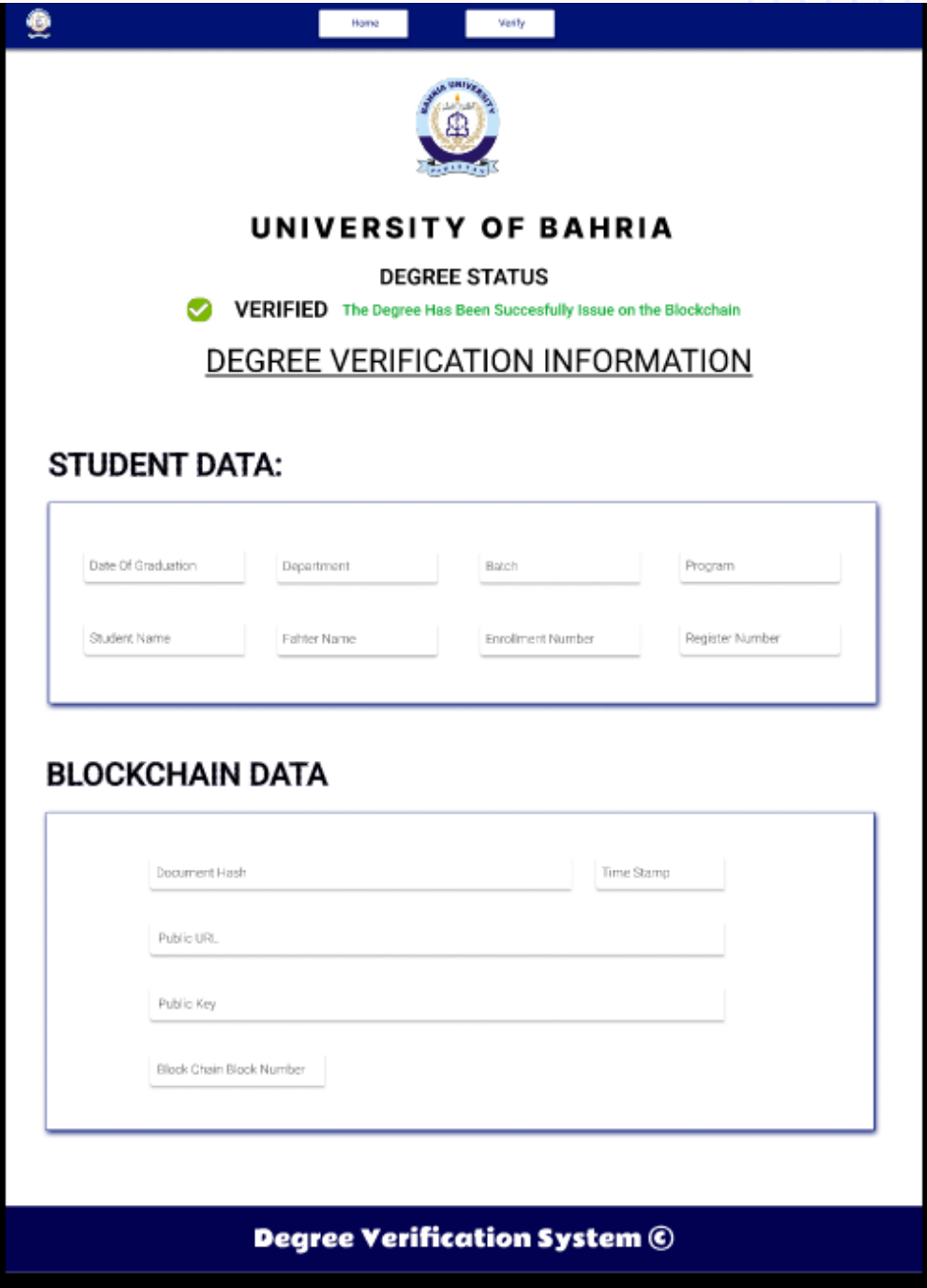
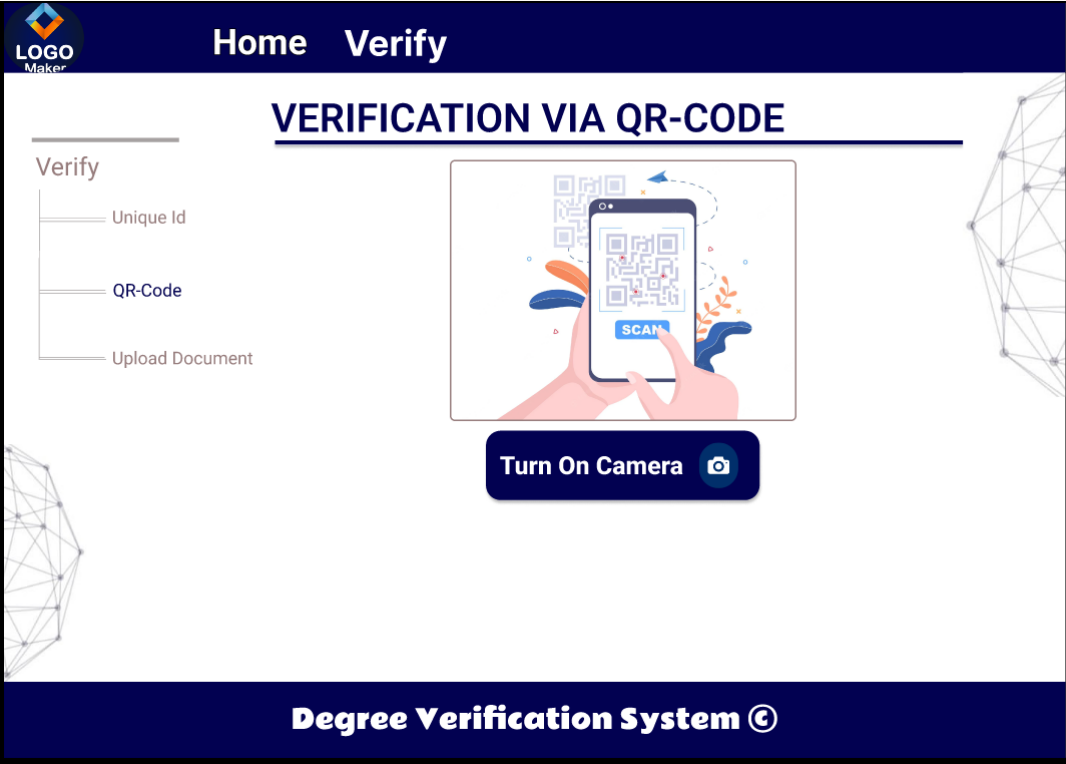
Unique Id: dfbde64c-62b8-43b3-a049-a25cbc471669

Confirm

Cancel

- ## PUBLIC ACCESSIBLE MODULE





# REFERENCES

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<https://www.ijert.org/research/certificate-verification-using-blockchain-and-generation-of-transcript-IJERTV10IS030260.pdf> ,3 March 2021.

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**THANK YOU**