

Project Overview

Project Name - DigiCerti

PID592 : Online Blockchain based certificate generation and validation system
for government organization.

Members:

- **Team A (Mentor - Dr Gaurav Pareek)**
 - Divanshu Prajapat
 - Kanakam Venkatam Vishnu Swaroop
 - Jay Patel
 - Rajat Singh

Timeline:

15/09/2022 - 11/02/2023

Project Details

Background

Nowadays, the problem of fake certificates is rising day by day and there's no mechanism to deal with the verification of certificates. We are aiming to build a system through which we can verify the authenticity of personal certificates in a trustless manner using Blockchain Technology.

Goals

We know the current scenario where everyone is proving fake skills using invalid certificates. Because of this, the system is not able to work in the way it must work and people are not able to trust each other. What we are achieving in our concept is building a trustless system where the user can prove their genuine skills and remove the fraud of certifications. We are also providing a service where the organization can provide the certificate through our portal, which will remove the overhead from the organization's end of managing the certification process.

Objective and Scope

“As technology is advancing, the creation of fake certificates becomes easier. The forged certificates range from fake universities issuing certificates to forged certificates of existing reputed universities. Due to centralization and digitalization, this fake credentials problem has become a pain in the neck for both the universities and recruiting organizations, and it needs to be addressed with a sharp solution.” Job-seekers are using fake certificates to prove the skills that they don’t have, to get jobs in various sectors. Since universities issuing certificates store the data in their central database, anyone who has access to it can change it. We need a database that is immutable, decentralized and transparent, which are the main features of Blockchain.

We are developing a web solution where the certificate issuer can register their organization. The issuer has the freedom to register different courses for which they are providing certification and also has the freedom to design custom certificates for each course. After completion of the course, the issuer can add details of course participants to the respective courses. Participants will receive a certificate of the corresponding course in their mail. Participants can also see their certificates on their respective dashboard. When the issuer issues the certificate, the corresponding record will also be added to the Blockchain for

immutability and transparency. Each certificate has a QR code on it. To verify the certificate one needs to scan the QR and they will be redirected to our verification portal. On the verification page you will find all the details of the certificate. You can also verify the certificate with our records on the blockchain.

Potential Obstacles

If some malicious actor corrupts our central database, we would not be able to retrieve the database back. Though we can still verify certificates through blockchain. But since we are using a one-way hashing algorithm to store data on the blockchain as hashes, we cannot reverse the hashes back to the original data.

If someone gets unauthorized access to some issuer dashboard, he/she may add false certificates to anybody's account. We may delete that false record from our central database, but it's not possible to delete it from the blockchain.

This was our first hackathon, so working on the project in limited time was quite difficult. We divided the work among ourselves and worked together. The first issue we were facing was to generate qr code and draw it over a certificate template image. After many internet searches, reading documentation, we found the solution. We have used qrcode and canvas library to draw qr code over certificates.

When we hosted our project on Azure Vm , we were facing issues. Our frontend was not connected to the backend despite working on our local system. To address this issue, we open the port of VM on which the backend is running and access it using VM ip from the frontend.

Cost Associated

The transaction fee for adding 100 certificate is around 0.000279024002976256 MATIC. This is around 0.0286 INR. So we can see that our model is cost effective also.

Screenshots of Output

DigiCerti About Logout

Hi!
Jordev

1 - Courses
57 - Students

Course Dashboard

Welcome
to
DigiCerti

ADD CERTIFICATIONS

S no	Course name	Instructorname	Certificate type
1	App Development Using Java	Jay Patel	C2

Courses details

View Course

Add Course

Course Name

Issuer name

Select Certificate

Submit

DigiCerti About Logout

Hi!
Jordev

1 - Courses
57 - Students

Students details

S no	Student name	StudentEmail	Grade
1	Varun	Varun123@gmail.com	A
2	jay patel	jaypatel@gmail.com	10
3	vishnu swaroop	vswaroop04@gmail.com	10
4	divanshu	divanshu123@gmail.com	10
5	Sasuke	sasu@gmail.com	10
6	vishnu swaroop	vswaroop04@gmail.com	10
7	Sasuke	sasu@gmail.com	10
8	Varun	Varun123@gmail.com	A

8	jay patel	jaypatel@gmail.com	10	View Certificate
9	divanshu	divanshu123@gmail.com	10	View Certificate

Add Student

[Manual Upload](#)

[Upload by Excel Sheet](#)

StudentName

StudentEmail

Grade

[Submit](#)

Add Student

[Manual Upload](#)

[Upload by Excel Sheet](#)

Please Upload the Excel File

[Choose File](#) No file chosen

DigiCerti

Hi !
rajab

10-Certifications
5-Issuers

About Logout

Dashboard

WELCOME!!!
TO
DIGILOCKER

Certifications



Course : App Development Using Java
Grade : A
Instructor: Jordenv

DigiCerti

About Logout

View & Verify your certificate here



[Credential Verification](#)



Verification Successful



Your account has been successfully verified!

Transaction Details

Chain Id	80001
Transaction Hash	0x617bc4932db19532b62901afd3a1f62e2485dfbd40d34099573d01ad5bcd0d65
from	0xE06D49a5F530b2144CecF6eCaF954Db5bBfa579E
to	0x3B2462c7f04c54288887dfE6E2154278Dd476A04

[Close](#)

[polygonscan](#) Mumbai

All Filters [Search by Address / Txn Hash / Block / Token](#) [🔍](#)

[Home](#) [Blockchain](#) [Tokens](#) [Misc](#) [Testnet](#)

Transaction Details

[Overview](#) [Logs \(1\)](#)

[This is a Polygon PoS **Testnet** transaction only]

② Transaction Hash:	0xe11af32d50d3e357605c272d5b8501a387b1f76edb686b5f54b0bc4d4b49335 🔗
② Status:	Success
② Block:	31933827 19 Block Confirmations
② Timestamp:	① 1 min ago (Feb-11-2023 06:26:21 AM +UTC) 🔗
② From:	0xE06D49a5F530b2144CecF6eCaF954Db5bBfa579E 🔗
② To:	Contract 0x3B2462c7f04c54288887dfE6E2154278Dd476A04 🔗

⑦ Value:	0 MATIC (\$0.00)
⑦ Transaction Fee:	0.000279024002976256 MATIC (\$0.00)
⑦ Txn Type:	2 (EIP-1559)
⑦ Gas Limit:	186,016
⑦ Gas Used by Transaction:	186,016 (100%)