***Certification System***

Certification System on the platform revolves around requesting certificates by the user and the administrators providing them with the course specific certificates. Figuring out all the required technology and tools needed for a system to work smoothly and efficiently is important. This is a technology stack that includes all the tools that will be needed at some point or the other in developing the system – be it front-end (client – side) or back-end (server – side).

A tech stack is chosen based on a few factors like size and type of product. Since our system has links with blockchain and there will be upscale in the future, we need a more flexible stack Also, the Product type is IoT – which works well with blockchain. One already existing and widely used tech stack is MEAN – MongoDB, Express JS, Angular JS, Node.js. This will be an appropriate stack for our purpose and since is uses mostly JS, it will be an easy developing.

Description on the tools of the stack :

*MongoDB* – Database using NOSQL database system. It uses binary JSON format and hence is easy to use. While most of out platform is based on blockchain, having a database that stores the information about the certificates issued out would be a good backup to have. We can always not use the database since there is no compulsion on using all tools in the stack.

*Express JS –* Express JS is a light framework used to build web applications in Node and is insanely fast, flexible, and simple. It interacts with the API to get data from Mongo.

*Angular JS –* Angular JS is the regular JavaScript framework we use and can be used on VSCode extension upon installing npm. This will serve as the client-side light logic processing in HTML, CSS code.

*Node.js –* This is the server-side JS execution environment that helps in building highly scalable and concurrent applications read. It makes Application Development easy since it runs as a single process and does not create a new thread for every request. Node.js is a good tool to work on the blockchain side of the platform.

Other basic tools required are HTML and CSS for simple designing of the platform. Some extensions that would be needed is Metamask. This is an important one since it will serve as the digital wallet for users. We might not need a lot of APIs but a few that can be thought upon is an Email Validator to validate the user email. Moreover, the built-in function of browsers for printing and downloading certificates can be used.