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THE NATIONAL COLLEGE
Autonomous
Jayanagar, Bangalore-560070

PROJECT REPORT
ON
HYPERLEDGER FABRIC BLOCKCHAIN BASED
JOB APPOINTMENT STATUS APPLICATION

BY

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20NCJB413

Under the guidance of

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FabJob project report submitted in partial fulfillment of the requirements
of

VI Semester BCA, THE NATIONAL COLLEGE JAYANAGAR



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CERTIFICATE

This is to certify the project report titled "Job Appointment Status Application" is a work done by **MEGHANA SANDEEP** of THE NATIONAL COLLEGE, Jayanagar, Bengaluru, in partial fulfillment of the requirements of VI Semester BCA during the year 2022-2023.

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Project Goal (Problem Statement)

To design, develop, implement and verify the Hyperledger Fabric based block chain application having the following features:

- 1) Query from the Job' data that is available as part of the Blockchain (Reading bulk data from the Blockchain)
- 2) Query any one of the Job' data that is available as part of the Blockchain (Reading individual record or data from the Blockchain)
- 3) Add a new Job data and verify that it gets added successfully into the Blockchain (Writing a new record into the blockchain and its verification)
- 4) Change the Status of existing Job data and verify (Changing [means creating new record as no modification of existing record is allowed in Blockchain] the existing data in the blockchain and its verification)
- 5) Modify the Status of the existing Job data and verify (Modifying the existing data in the blockchain and its verification). Here, also a new record is created with new owner Name and the existing record is not getting modified which is one of the main feature of Blockchain technology

Note: These verifications need to be done both in Command Line Interface (CLI) mode and also using browser based front-end mode.

Solution Proposed

- 1) We will design, develop, implement and verify the Hyperledger Fabric based Blockchain network namely "Job Appointment Status Application" in an Ubuntu O/S based EC2 Instance in AWS.
- 2) We will write the required Blockchain configuration and other files so as to bring-up the Blockchain network
- 3) We will write a Golang program namely "fabjob.go" in which we will implement the main logic of the Solution.
- 4) In the fabjob.go program, we will design the Job data with the Name, Status, Sex, Designation etc..

```

$ go run fabjob.go
[INFO] Starting Hyperledger Fabric...
[INFO] Creating Blockchain network...
[INFO] Creating Peer nodes...
[INFO] Creating Orderer nodes...
[INFO] Starting Peer nodes...
[INFO] Starting Orderer nodes...
[INFO] Blockchain network started successfully.
[INFO] Querying Blockchain network...
[INFO] Query result: [{"Name": "John", "Status": "Applied", "Sex": "Male", "Designation": "Software Engineer"}, {"Name": "Jane", "Status": "Interviewed", "Sex": "Female", "Designation": "Marketing Executive"}, {"Name": "Mike", "Status": "Short-listed", "Sex": "Male", "Designation": "Sales Representative"}, {"Name": "Sarah", "Status": "Applied", "Sex": "Female", "Designation": "Customer Support"}, {"Name": "David", "Status": "Interviewed", "Sex": "Male", "Designation": "Product Manager"}, {"Name": "Emily", "Status": "Short-listed", "Sex": "Female", "Designation": "Business Development"}, {"Name": "Chris", "Status": "Applied", "Sex": "Male", "Designation": "Quality Assurance"}, {"Name": "Alex", "Status": "Interviewed", "Sex": "Male", "Designation": "Operations Manager"}, {"Name": "Lisa", "Status": "Short-listed", "Sex": "Female", "Designation": "Human Resources"}, {"Name": "Tom", "Status": "Applied", "Sex": "Male", "Designation": "Systems Administrator"}]

```

- 5) The program will have 10 Job data which will initialize the Blockchain on the starting of the Blockchain

```

$ go run fabjob.go
[INFO] Starting Hyperledger Fabric...
[INFO] Creating Blockchain network...
[INFO] Creating Peer nodes...
[INFO] Creating Orderer nodes...
[INFO] Starting Peer nodes...
[INFO] Starting Orderer nodes...
[INFO] Blockchain network started successfully.
[INFO] Querying Blockchain network...
[INFO] Query result: [{"Name": "John", "Status": "Applied", "Sex": "Male", "Designation": "Software Engineer"}, {"Name": "Jane", "Status": "Interviewed", "Sex": "Female", "Designation": "Marketing Executive"}, {"Name": "Mike", "Status": "Short-listed", "Sex": "Male", "Designation": "Sales Representative"}, {"Name": "Sarah", "Status": "Applied", "Sex": "Female", "Designation": "Customer Support"}, {"Name": "David", "Status": "Interviewed", "Sex": "Male", "Designation": "Product Manager"}, {"Name": "Emily", "Status": "Short-listed", "Sex": "Female", "Designation": "Business Development"}, {"Name": "Chris", "Status": "Applied", "Sex": "Male", "Designation": "Quality Assurance"}, {"Name": "Alex", "Status": "Interviewed", "Sex": "Male", "Designation": "Operations Manager"}, {"Name": "Lisa", "Status": "Short-listed", "Sex": "Female", "Designation": "Human Resources"}, {"Name": "Tom", "Status": "Applied", "Sex": "Male", "Designation": "Systems Administrator"}]

```

- 6) In the program, we will create the functions queryJob, initLedger, createJob, queryAllJobs and changeJobStatus to meet the Solution requirements.

```
APPOINTMENT STATUS APPLICATION
-172-31-42-255:~/fabric-samples/FabJob# node change-JOB4-Status-Appointed.js
path:/root/fabric-samples/FabJob/hfc-key-store
fully loaded user1 from persistence
ing transaction_id: b24f090724a8d06569b4a028c44416511cba4303c1220bf37ca5eae90cd7786
ction proposal was good
fully sent Proposal and received ProposalResponse: Status - 200, message - ""
ansaction has been committed on peer localhost:7051
ransaction promise and event listener promise have completed
fully sent transaction to the orderer.
fully committed the change to the ledger by the peer
-172-31-42-255:~/fabric-samples/FabJob# █
```

- Also, we will create relevant JavaScript files to interact with the established Blockchain network in CLI mode, so as to meet the solution requirements.
-) We will create the required Shell script files so as to automate the starting and closing of the Blockchain network.
 -) We will also create a frontend (React App based) for the solution so that you can interact with the Blockchain network from your Windows system.