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THE NATIONAL COLLEGE

Autonomous

Jayanagar, Bengaluru - 560070

**HYPERLEDGER FABRIC BLOCKCHAIN BASED CBFTNATO
APPLICATION**

A Dissertation submitted in partial fulfilment of the requirement for the award of degree

BACHELOR OF COMPUTER APPLICATION

By

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Under the Guidance of

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HYPERLEDGER FABRIC BLOCKCHAIN BASED CBFTNATO APPLICATION

project report submitted in partial fulfilment of the requirements of VI Semester BCA

THE NATIONAL COLLEGE JAYANAGAR, BANGALORE – 70



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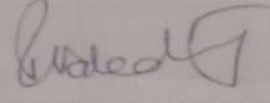
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CERTIFICATE

This is to certify that the project report is titled "Hyperledger fabric blockchain based CBFTNATO application" is bonafide record of work done by Jeevan S (19NCJB417) of **THE NATIONAL COLLEGE** Jayanagar, Bangalore. In partial fulfilment of requirements of VI SEMESTER BCA during the year 2021-2022.


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PROJECT GUIDE

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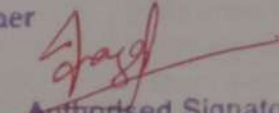
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Authorised Signatory

Date of Examination

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VI	Setup the "CBFTW" Project	11-18
	a) Go to "CBFTW-network" directory and create Cryptographic based certificates and update the "docker-compose.yml" file with the relevant CA certificate and save the file	
	b) Create a directory "channel-artifacts" and create genesis.block and channel.tx files under that directory and verify. Convert the "start.sh" file into an executable file	
	c) Go to "CBFTW" directory and convert the "startCBFTW.sh" and "teardownCBFTW.sh" files into executable ones	
	d) Execute the command "npm install" and verify the creation of "node_modules" directory	
VII	Start the docker containers, bring-up the Blockchain Network, Create the channel, join peer0 to the channel,	18-23
	Install, instantiate and invoke the smart contract "banks.go" on peer0 automatically by executing the shell script file "startCBFTW.sh1"	
	a) Verify that all the required docker containers are up and running	
	b) Enroll the "Admin" into Blockchain Network using "enrollAdmin.js" file	
	c) Register "User1" into the Blockchain Network using "registerUser.js" file	
	d) Query and list all the records (Bank , Customer and Forex records) that have got instantiated into the Blockchain by the Smart contract "banks.go" using "query.js" file	
	e) Query the specified Bank record and verify	
	f) Query the specified Customer record and verify	
	g) Query the specified Forex record and verify	
	h) Add a new Bank data into the Blockchain and then query that record and verify it	
	i) Add a new Customer data into the Blockchain and then query that record and verify it	
	j) Add a new Forex rate data into the Blockchain and then query that record and verify it	
	k) Query and Verify the Customers (JPY_Alice_456 and UK_Alice_456) data and note down their account balances	
	l) Query the Forex rate of "JPY:GRB" and note it down	
	m) Pay the Customer UK_Alice_456 with 1000 JPY units from Customer JPY_Alice_456	
	n) Query and Verify the Customers (JPY_Alice_456 and UK_Alice_456) data and note down their new account balances and verify	
	o) Query all the Current Data in the Blockchain	

	Close the Project and then Start the Project so that we can use the CBFTW Project Frontend	
	b) Verify that all the required docker containers are up and running	
	f) Enroll the "Admin" into Blockchain Network using "enrollAdmin.js" file	
	g) Register "User1" into the Blockchain Network using "registerUser.js" file	
	h) Query and list all the records (Bank , Customer and Forex records) that have got instantiated into the Blockchain by the Smart contract "banks.go" using "query.js" file	
	9) Setup and loading of "CBFTW Frontend"	
	a) Go to the "CBFTW-front" directory, execute the "npm install" command and verify the creation of "node_modules" directory	
	b) Open the "/CBFTW-front/src/App.js" file and update the Public IP address of the CBFTW EC2 Instance and save the file	
	c) From the "CBFTW" directory, execute the command "node CBFTW-backend.js" and verify the display of "Listening on port 4001".	
	d) Create the duplicate session of the EC2 Instance, navigate to "CBFTW-front" directory in that instance, execute the command "npm run Start" and verify the successful starting of the React App Development Server ²⁷	
	e) Load the "CBFTW-frontend" onto the Chrome browser by using the url: "http://Public IP of the Instance:3000/" and verify the successful display of the CBFTW frontend	
VII	Interaction with the CBFTW Blockchain Network using CBFTW Frontend	23-31
	a) Click on "QUERY ALL" option and then "SEARCH ALL" button	
	b) Query an existing Bank: Click on QUERY, enter "US_Bank" then click on "SEARCH" button	
	c) Query an existing Customer: Click on QUERY, enter "JPY_John_Doe_123" then click on "SEARCH"	
	d) Query an existing Forex Pair: Click on QUERY, enter "USD:JPY" then click on "SEARCH" button	
	a) Create a new Customer: Click on the CREATE CUSTOMER option, enter the new Customer details and then click on "CREATE CUSTOMER" button	
	e) Query the created Customer: Click on the QUERY option, enter the created Customer details and then click on "SEARCH" button	
	f) Create a new Bank: Click on the CREATE BANK option, enter the new Bank details and then click on "CREATE BANK" button	
	g) Query the created Bank: Click on the QUERY option, enter the created Bank details and then click on "SEARCH" button	
	h) Create a new Forex: Click on the CREATE FOREX option, enter the new Forex details and then click on	

	i) Query the created Forex: Click on the QUERY option, enter the created Query details and then click on	
	j) Query and Verify the Customers (JPY_Alice_456 and UK_Alice_456) data and note down their current account balances	
	k) Pay 1000 units in Japanese currency from the JPY_Bank Customer "JPY_Alice_456" to the UK_Bank Customer "UK_Alice_456"	
	l) Query and Verify the Customers (JPY_Alice_456 and UK_Alice_456) data and note down their current account balances	
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