Laptop Specification

Manufacturer: Acer
Unit: Acer Nitro AN515-52-56CQ
OS: Ubuntu 18.04.1 LTS
OS Type: 64 bit
CPU: Intel(R) Core(TM) i5-8300H CPU @ 2.30GHz 1 physical processor; 4 cores; 8 threads
Ram: 8GB
Kernel: Linux 4.15.0-43-generic (x86_64)

Installation

Open terminal and begin Installation by typing the following commands (commands are with yellow higlights).

Commands for installing prerequisites:

```
curl -O https://hyperledger.github.io/composer/latest/prereqs-ubuntu.sh
chmod u+x prereqs-ubuntu.sh
./prereqs-ubuntu.sh
```

Check the following by typing this:

```
docker –version
npm –version
git –version
python –version
node –version
```

Install Go:

```
wget https://storage.googleapis.com/golang/go1.9.2.linux-amd64.tar.gz && \
sudo tar -C /usr/local -xzf go1.9.2.linux-amd64.tar.gz && \
rm go1.9.2.linux-amd64.tar.gz && \
echo 'export PATH=$PATH:/usr/local/go/bin' | sudo tee -a /etc/profile && \
echo 'export GOPATH=$HOME/go' | tee -a $HOME/.bashrc && \
echo 'export PATH=$PATH:$GOROOT/bin:$GOPATH/bin' | tee -a $HOME/.bashrc && \
mkdir -p $HOME/go/{src,pkg,bin}
```

Then check go:

```
go version
```

Install vscode:

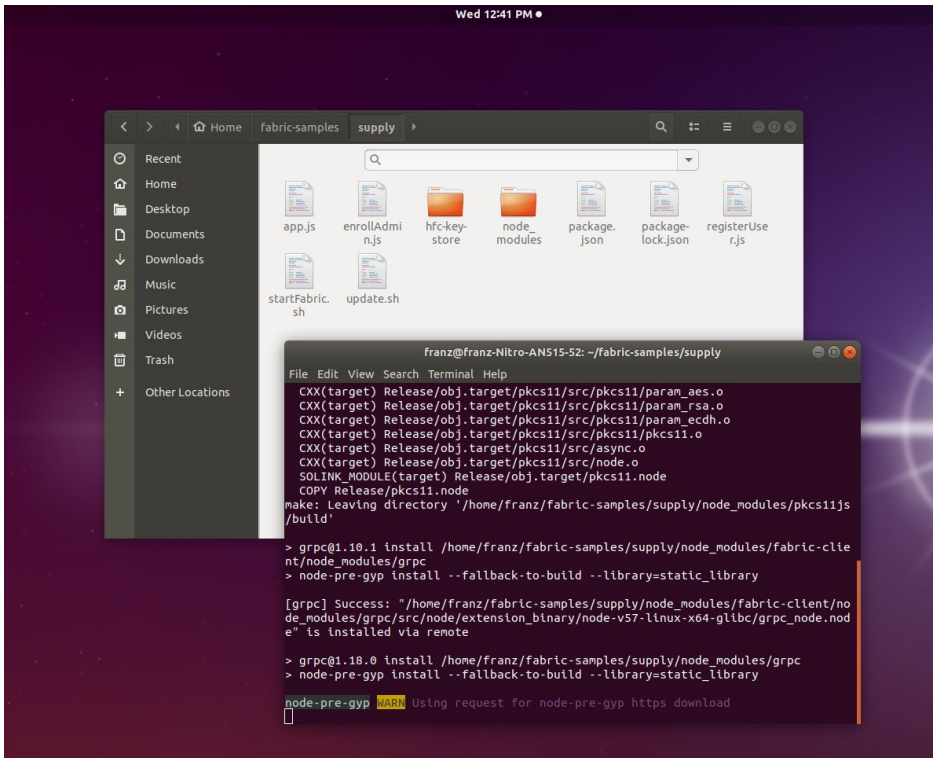
```
sudo snap install vscode --classic
```

Open vscode then go to view > extensions and search hyperledger composer then install it.

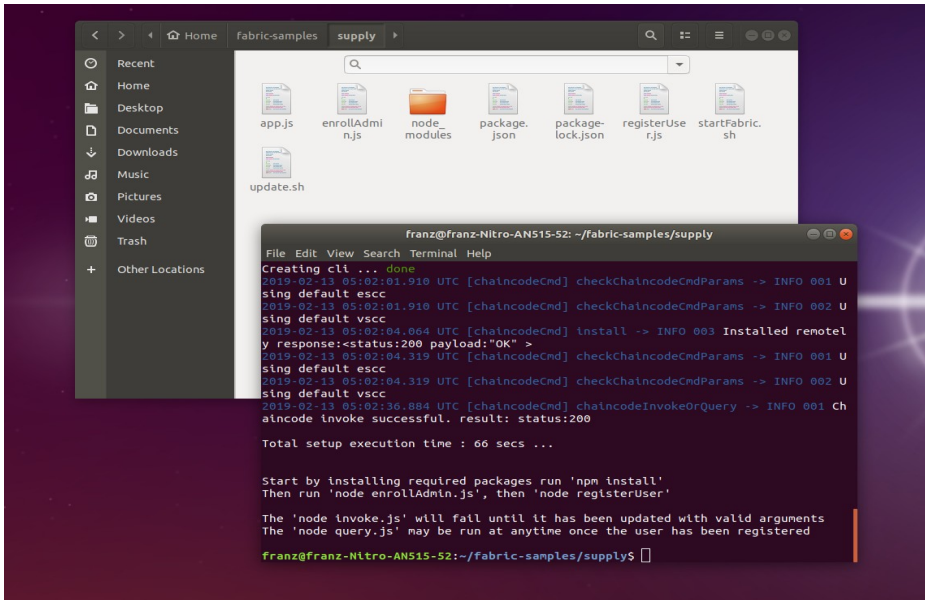
Run a Hyperledger application

MANDATORY

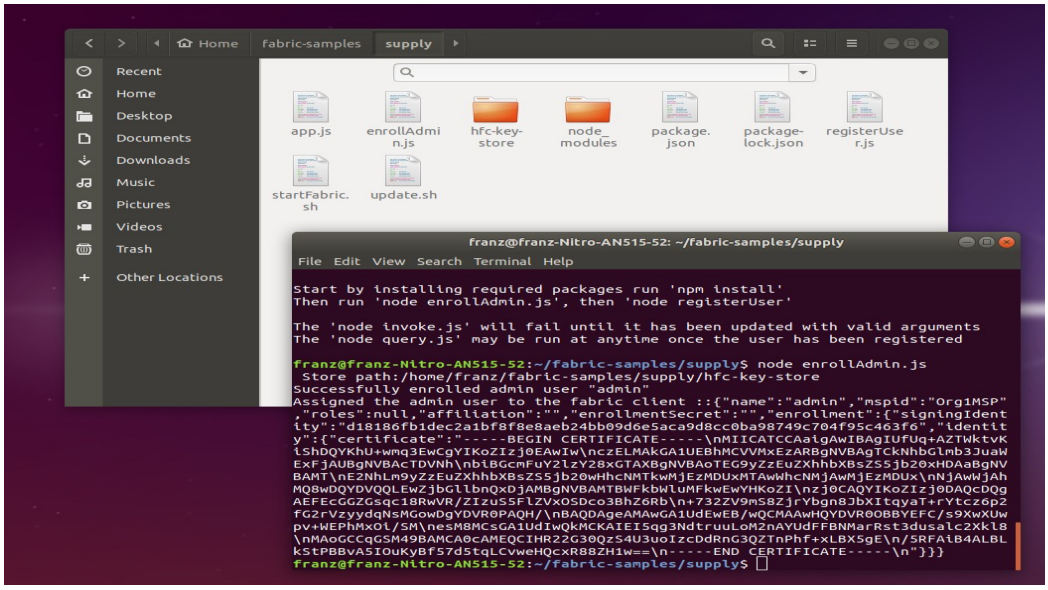
1. Open a terminal type the commands to clone the repository.
fabric-sample folder:
github.com/hyperledger/fabric-samples
blockchain-training-labs:
git clone https://github.com/khrandm/blockchain-training-labs
2. Open the folder you cloned named **blockchain-training-labs** and copy the folder named supply and chaincode then paste it to the folder you also cloned named **fabric-samples** and merge existing files.
3. Open supply folder. Then, right click to open a terminal and type npm install.
4. you will notice that it will stuck with the WARN like in the picture below. Just press " Ctrl + C" to cancel the current process.



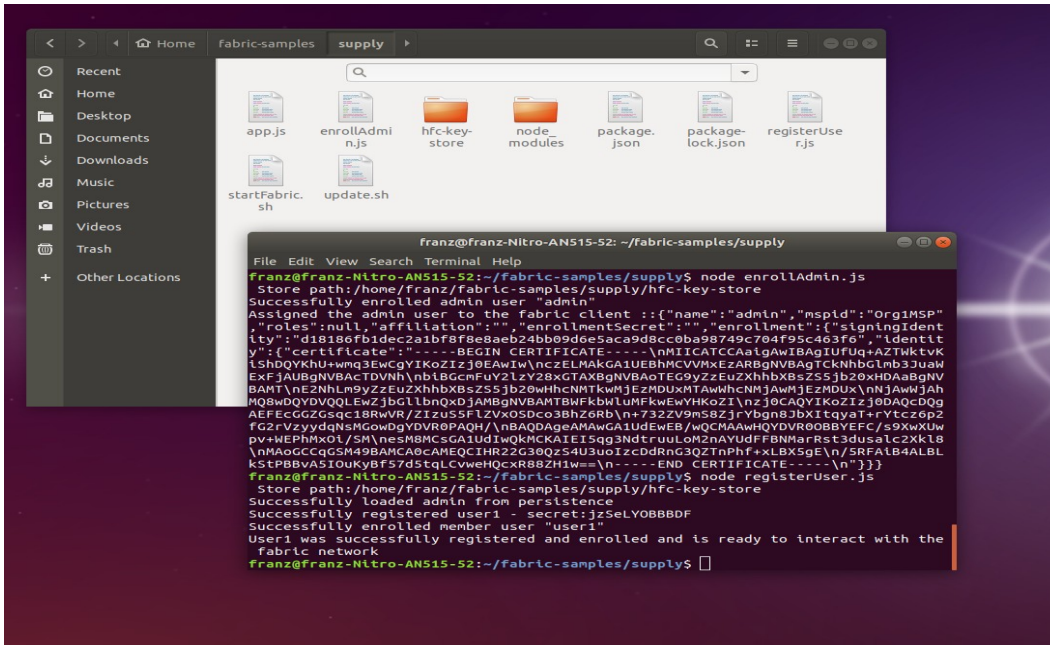
5. Run the file **startFabric.sh** by typing ./startFabric.sh in the terminal. (Notice the output it should be like the picture below)



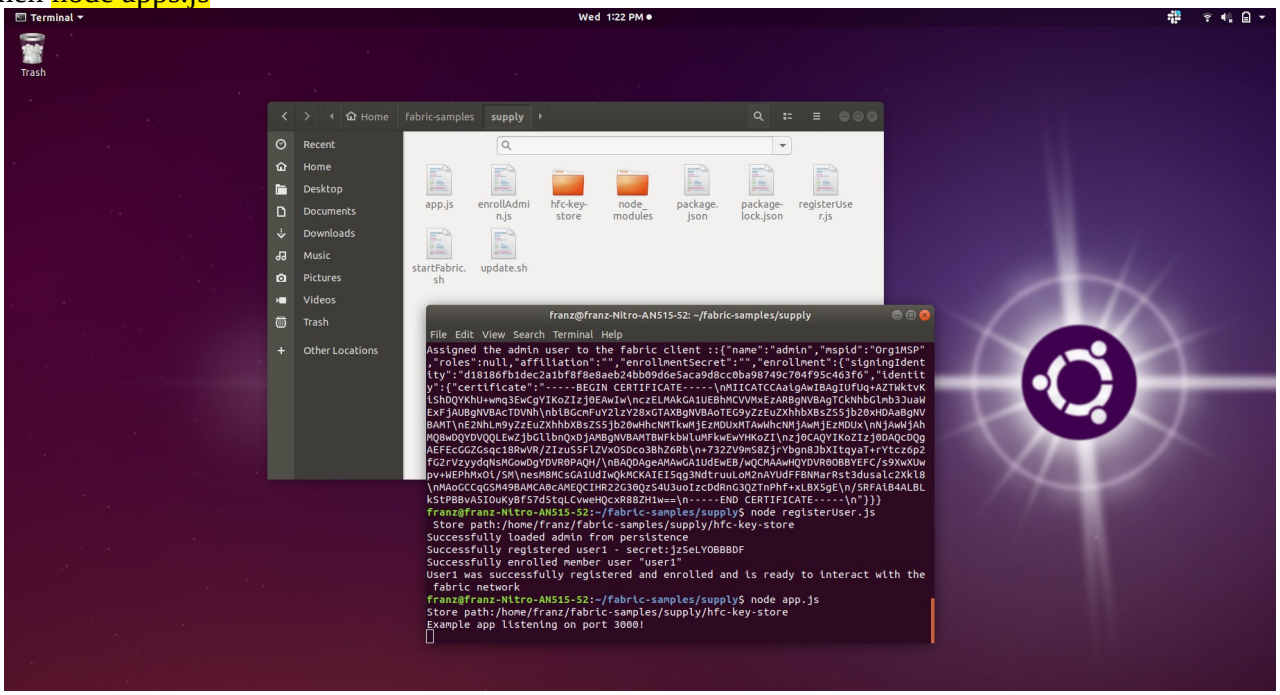
6. Type node enrollAdmin.js



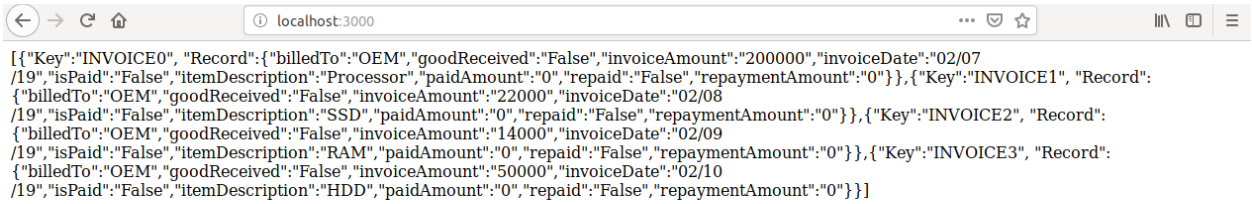
7. Then node registerUser.js



8. Then node apps.js

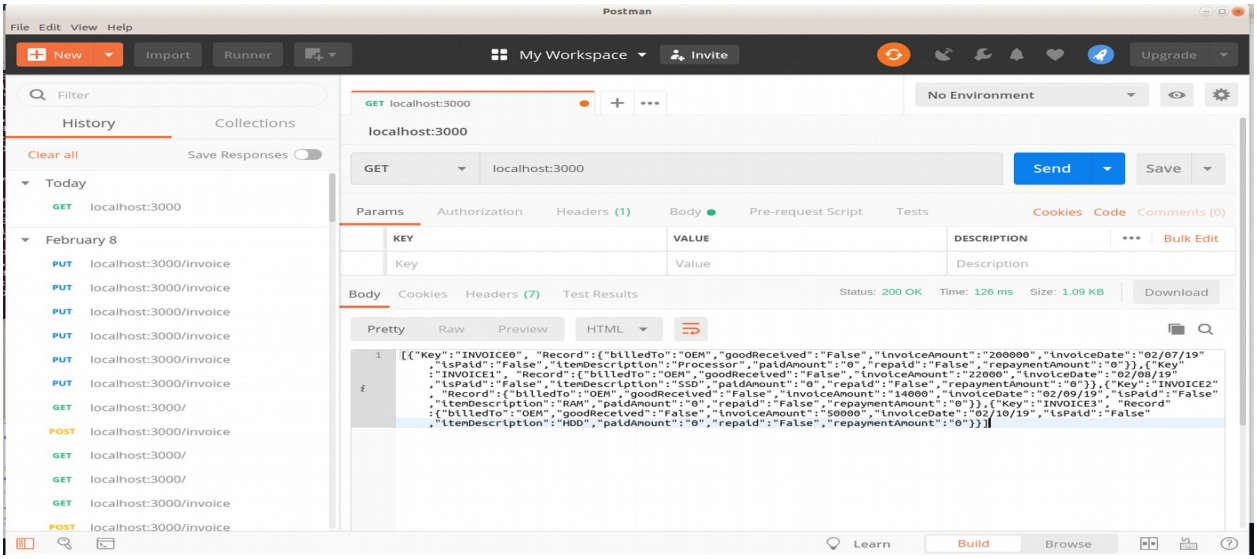


9. To see the app.js open a browser and type: localhost:3000 and it should be like this



10. search in you ubuntu/pc **ubuntu software** (press windows key and search ubuntu software) after opening it search postman and install.

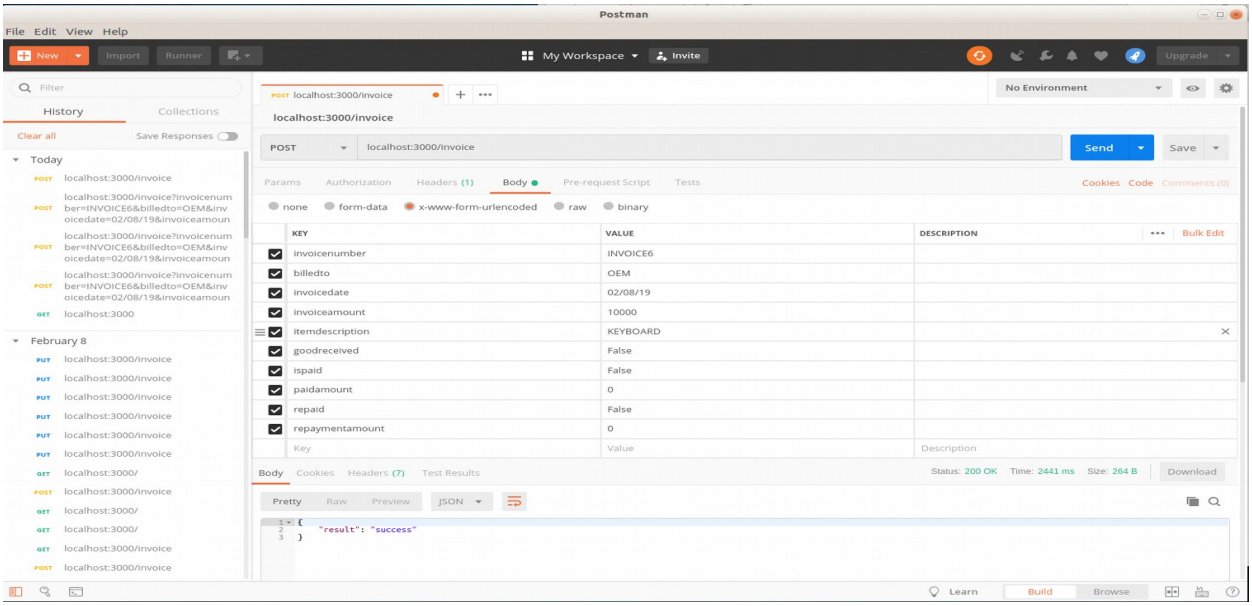
11. Open postman and **send**



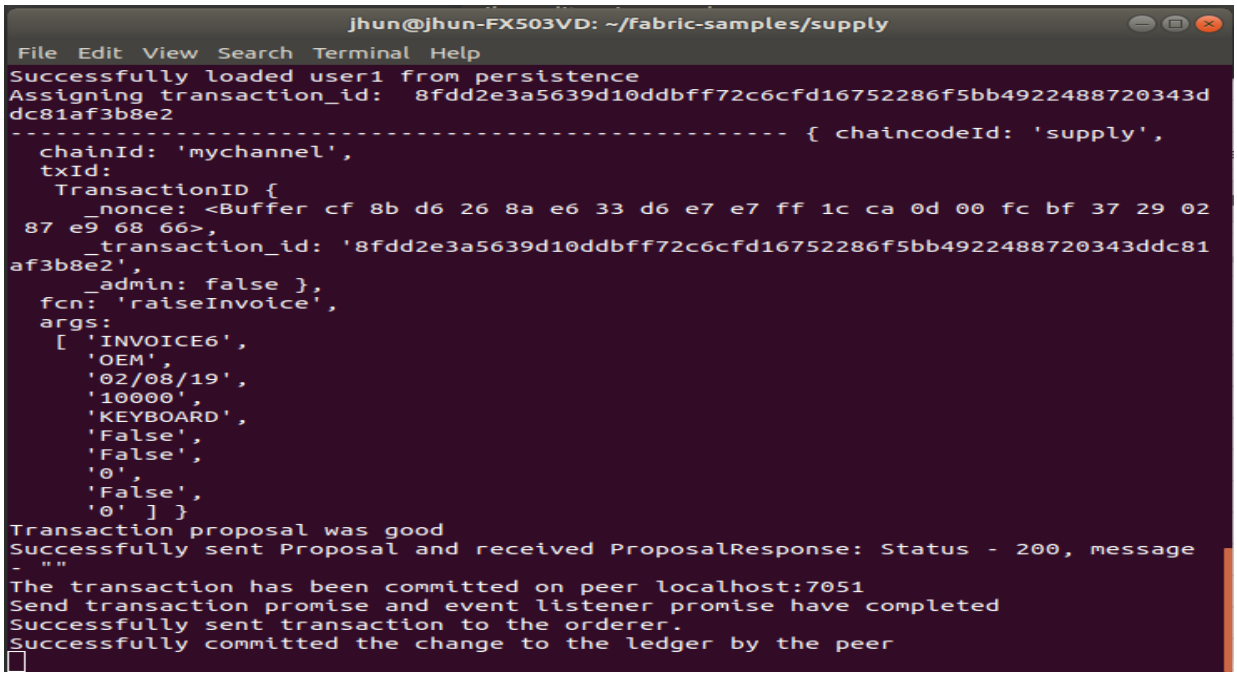
12. Use the Post HTTP Method. In this function it will request to server to accept the data enclosed in the body of the request message.

For example we will use these following fields and their specific value.
invoicenumber: INVOICE6
billedto: OEM
invoicedate: 02/08/19
invoiceamount: 10000
itemdescription: KEYBOARD
goodreceived: False
ispaid: False
paidamount: 0
repaid: False
repaymentamount: 0

The result below will look like these:

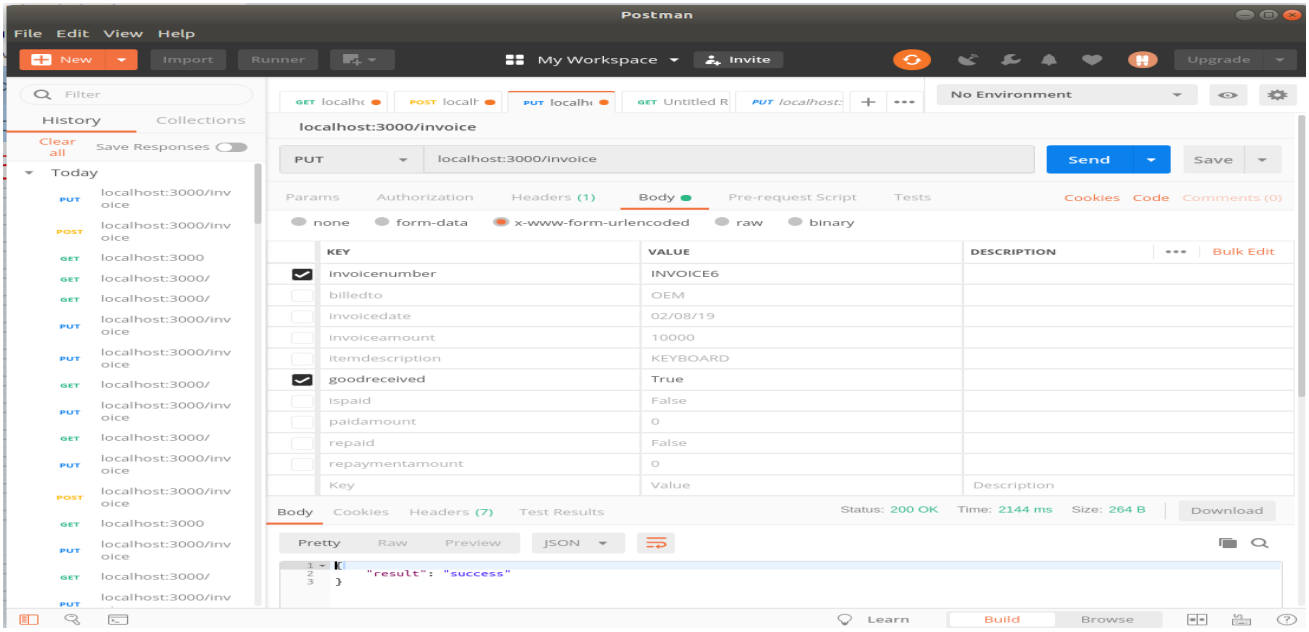


Your terminal should like these:

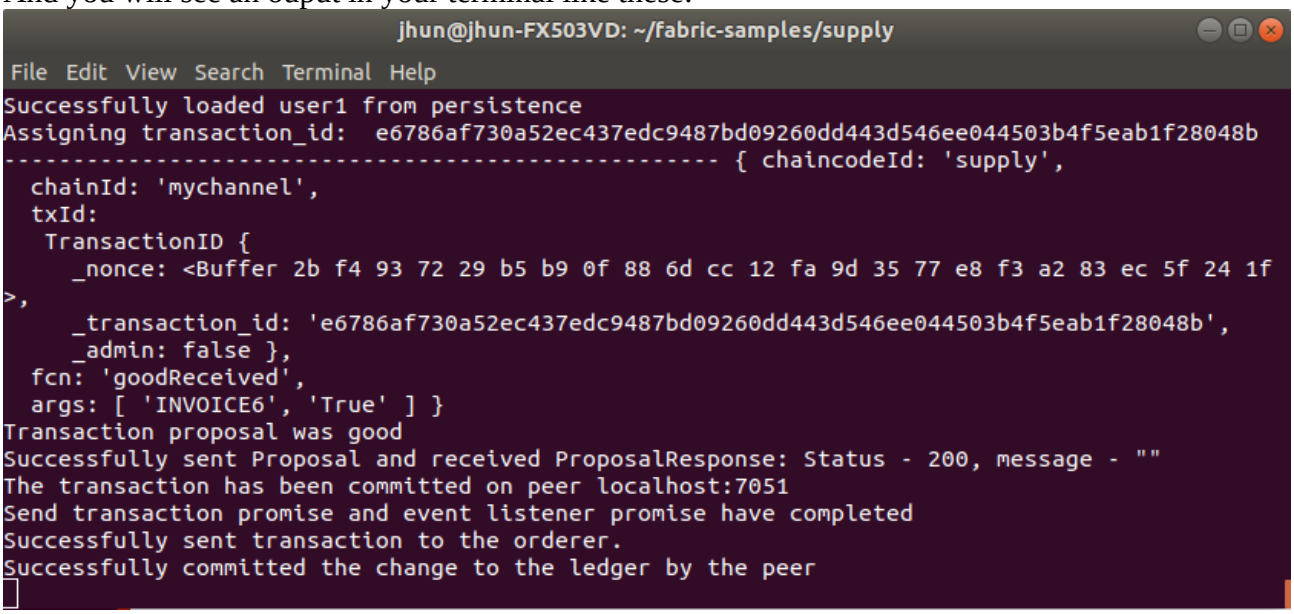


The transaction has been sent in your peer. A new invoice has been created!

13. Use the PUT HTTP Method.In this function as we are modifying a data
Select x-www-form URL Encoded as a structure

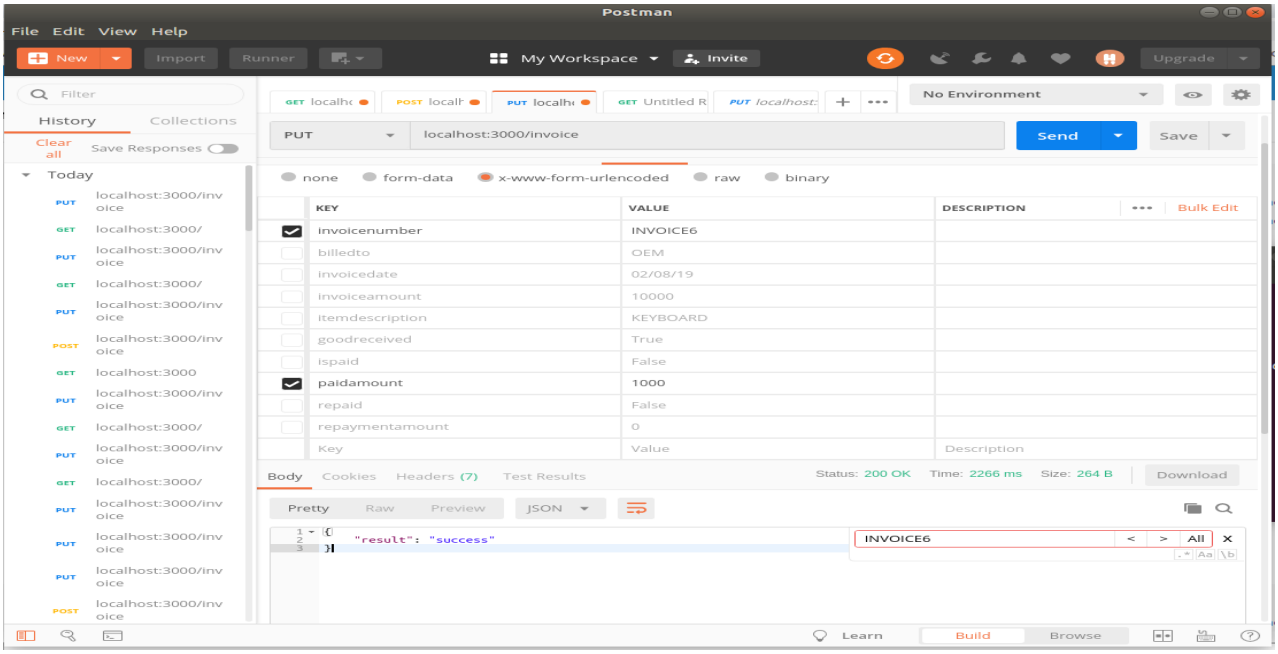


And you will see an ouput in your terminal like these:

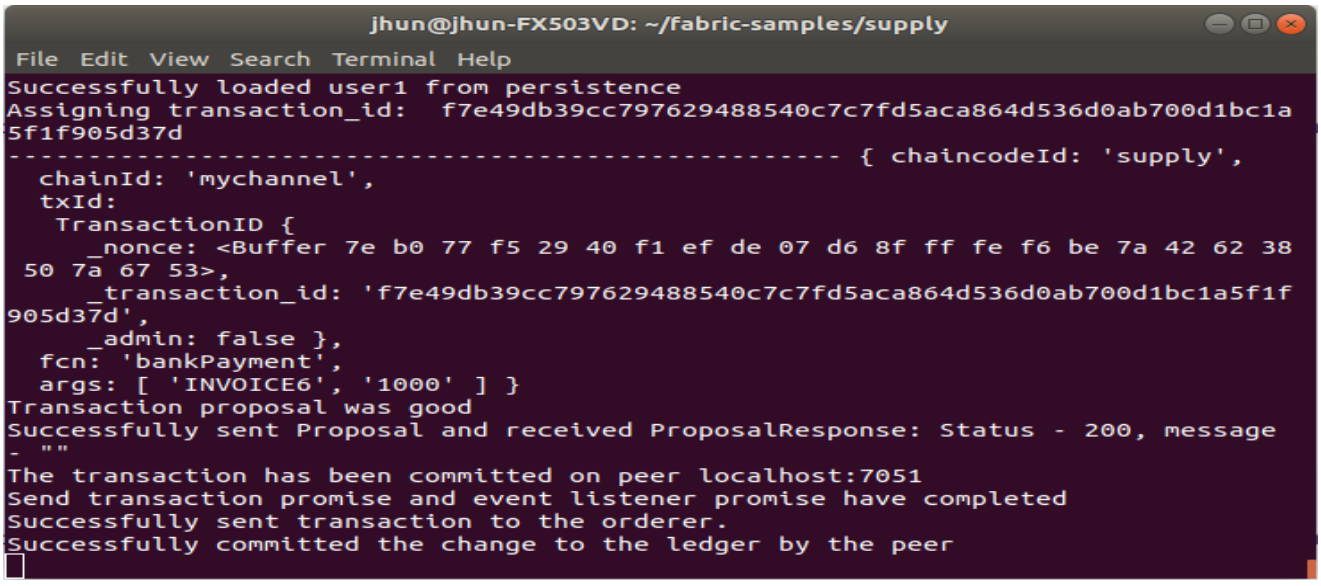


14. Use the PUT HTTP Method.In this function as we are modifying a data
Select x-www-form URL Encoded as a structure

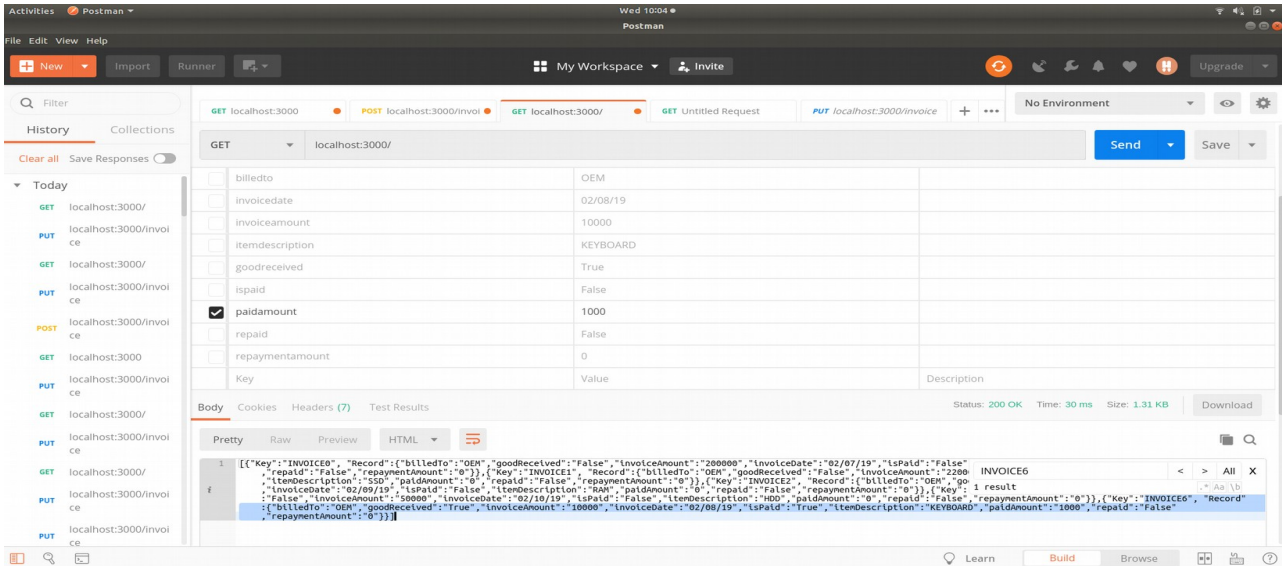
Unchecked all the fields except to **invoicenumber** and **paidamount.** Then click send and it should like these.



And you will see an ouput in your terminal like these:



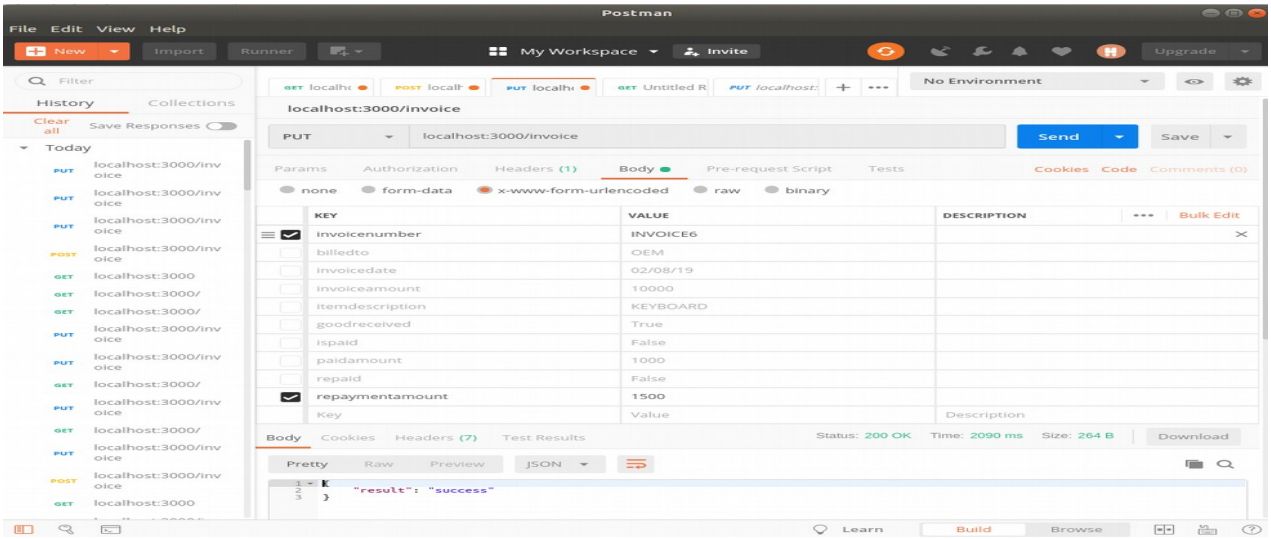
In your postman the result will be something like these:
Use the GET HTTP Method then type “localhost:3000” and add value to the **paidamount** key.
Here is the example.



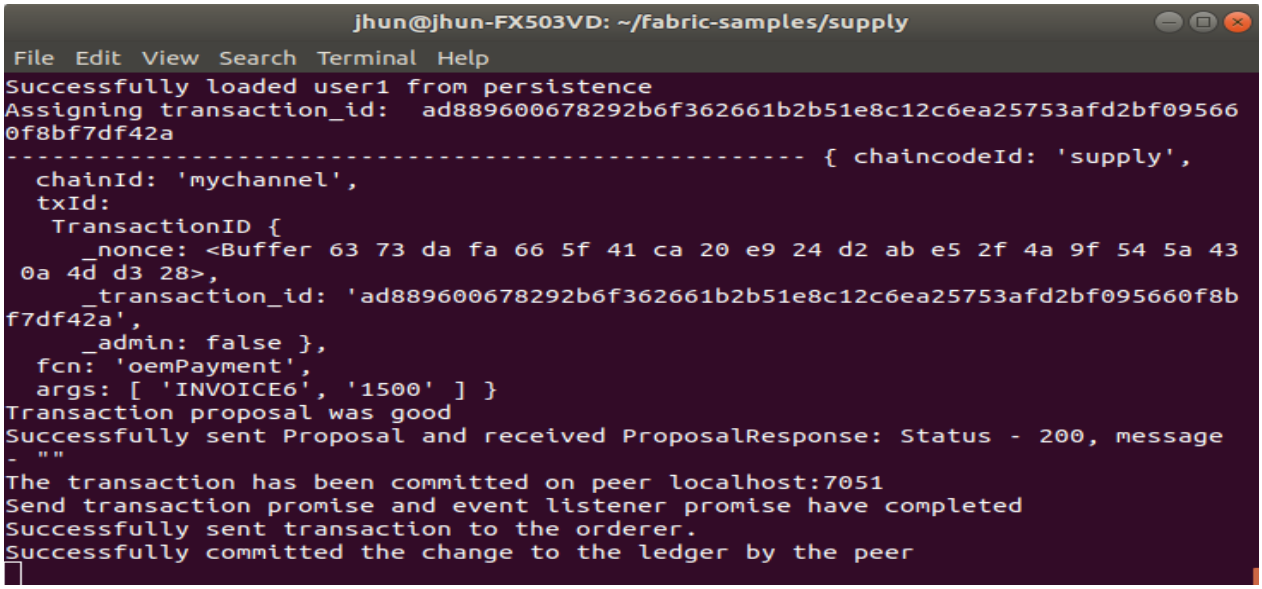
As you can see in the results below the value of the field **isPaid** have changed from “False” to “True” it means that the product has been paid.

15. Use the PUT HTTP Method.In this function as we are modifying a data
    Select x-www-form URL Encoded as a structure

Unchecked all the fields except to **invoicenumber** and **repaymentamount.** Then click send and it should like these.

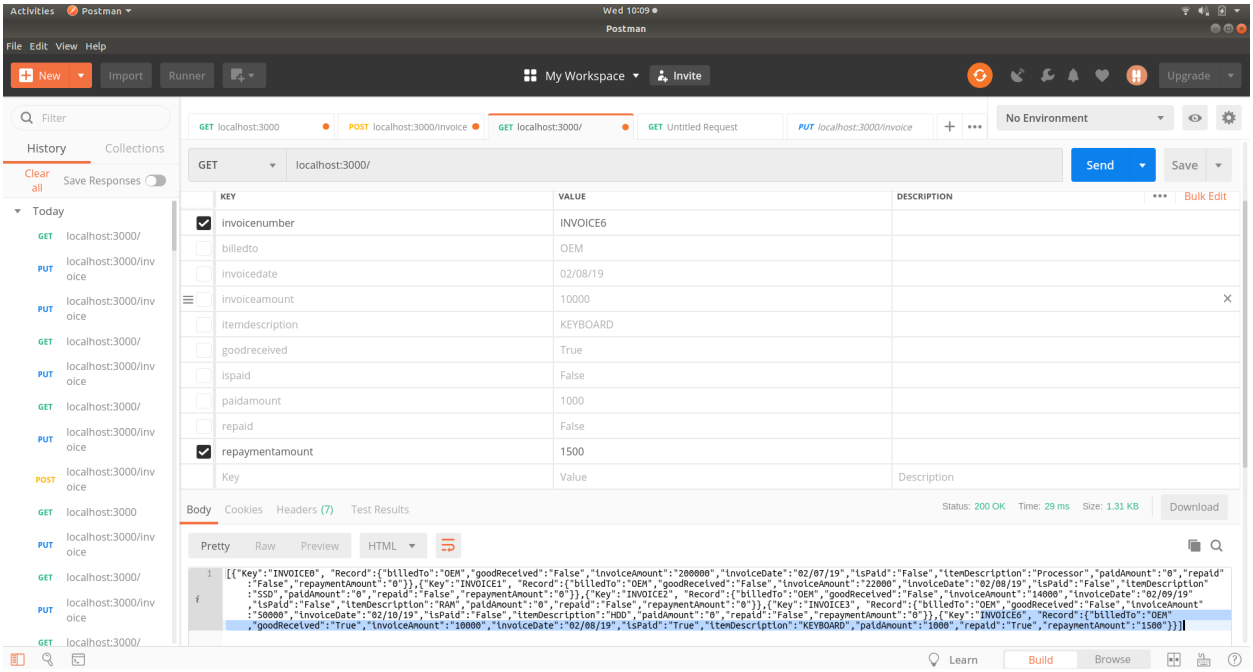


And you will see an ouput in your terminal like these:



In your

postman the result will be something like these:
Use the GET HTTP Method then type “localhost:3000” and add value to the **repayment** key.
Here is the example.



Notice the value of **repaid** if it change from False to True.

OPTIONAL
Step 1
Go back to Terminal type:
cd
cd fabric-samples
docker kill $(docker ps -q)
docker rm $(docker ps -aq)
docker rmi $(docker images dev-* -q)
cd supply

Then:
go get github.com/golang/protobuf/proto
go get github.com/hyperledger/fabric/common/attrmgr
go get github.com/pkg/errors
go get github.com/hyperledger/fabric/core/chaincode/lib/cid

now open file manager go to Home/go/src/github.com
copy three folders

hyperledger
pkg
golang

paste it inside fabric-sample/chaincode
Type:
./startFabric.sh
npm install
node enrollAdmin.sh
node registerSupplier.sh
node registerOem.sh
node registerBank.sh
node app
You should see a localhost:3000

In postman change method from **GET** to **POST**
below url in **Params | Authroization | Headers | Body**
click **Headers**
check if key below is: (correct it if wrong)

Content-Type	**Value**
user	supplier

next go to the **Body** tab
click the x-www-form-url-encoded
you should see a form there and find from the right side the bulk edit (orange color) and click then copy and paste this: (if there is a letters or words just replace it)

invoicenumber:INVOICE6
billedto:OEM
invoicedate:02/08/19
invoiceamount:10000

itemdescription:KEYBOARD
goodreceived:False
ispaid:False
paidamount:0
repaid:False
repaymentamount:0

Hit send and You should see result Success at the bottom
Now we have successfully raise an invoice
add another request GET method localhost:3000 (or just change the **GET** to **POST** and delete **/invoice** from localhost:3000/invoice)
now hit send to see your invoices in the respond below

Step 2
Beside POST localhost:3000/invoice click the plus sign
change the method to **PUT** and localhost:3000/invoice
Go to **Headers** tab and just like earliear add user with value of oem
then go to **Body** click x-www-form-urlencoded

add these data

KEY	VALUE
invoicenumber	INVOICE001
goodreceived	True

Now hit the send
you should see result : "success"

Step 3

click the plus sign again to add another request **PUT** method and localhost:3000/invoice

on **Header** tab add user with value of bank
on **Body** tab x-www-form-urlencoded
add these data:

invoicenumber	INVOICE001
paidamount	9000

there are conditions here, the paid amount should be less than invoice amount

hit send
you should see result : "success"

go to **GET localhost:3000** tab then hit send
then check if data is updated
the invoice will idicate that the isPaid = true
and the paidamount will be 9000

DONE!