Learning Report-Name of Module

L&T Technology Services

Document History

Ver. Rel. No.	Release Date	Prepared. By	Reviewed By	Approved By	Remarks/Revision Details
1	6/9/2021	Gokul A D			

Contents

Objective:

- To explain about the learning module - Object Oriented programming using Python
- To explain about the learning module - Network programming Using Python

Overall Learning:

Object Oriented Programming Using Python

- The first step was to familiarize with basic python data types like integer,float,string,list,tuple.dictionary etc.
- Creation,manipulation and deletion of such data types where studied.
- The next step was to learn about object oriented programming. The features like encapsulation. inheritance, abstraction, polymorphism were studied.
- Encapsulation is the process of putting data of a particular object in a single capsule. Python has an inbuilt feature for that. It is called class.
- Inheritance is the ability of one class to inherit the features of another class.
- Abstraction is the feature in which only the essential data is shown to users.
- Polymorphism is the ability of a programming language to present the same interface for several different underlying data types.
- The next step was to learn about exception handling. Exception is a deviation from standard convention. It uses keywords like try and except.
- A module called pytest was introduced. It can be used to check if a function is correct or not. It uses the assert keyword.

Network Programming Using Python

- A software called wireshark was introduced. It is used for monitoring the packets in the network.
- Networking commands like ping,netstat,hostname,tracert,Nslookup,traceroute etc were studied.
- A basic introduction about TCP protocol and subnetting was given.
- A python module named IPAddress was studied. It has functions like bits(),version() and words() for analysing an ip address.
- Another module named IPNetwork is used to analyse the netmask and hostmask. It can also be used to check if the network is private,multicast and loopback.
- The key take away from this learning module is the lesson about sockets.
- Sockets are endpoints for sending and receiving information.
- A basic socket program was covered. It creates a local client and a server. It sends data between them.

Activity 1: BU ALLOCATION SERVER USING SOCKET PROGRAMMING

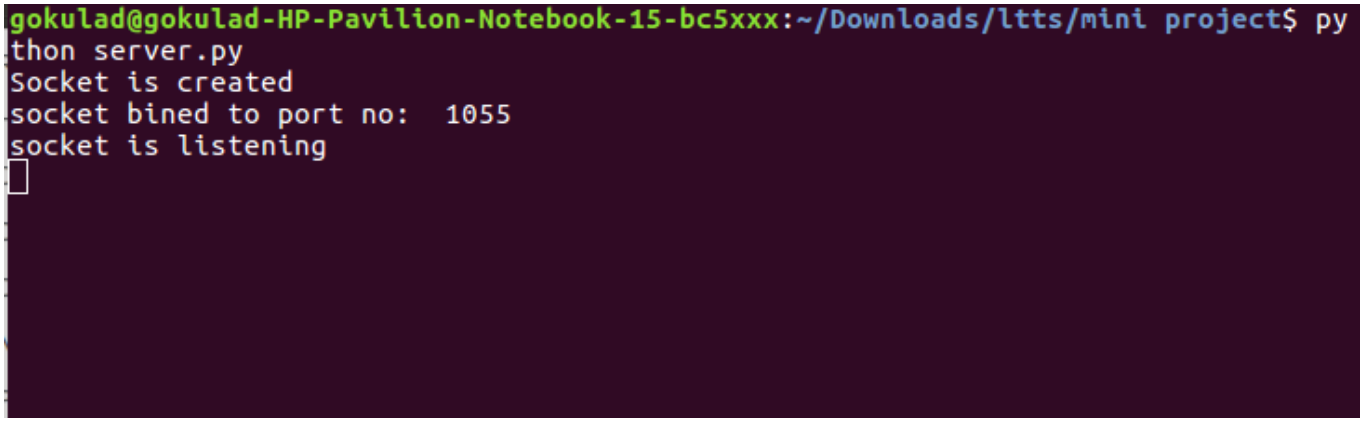
Goal of Activity: There is a server and a client. Data about an employee transferred from client to server. Server does the analysis of the data and decides the Business Unit. The allocated BU is sent back to the client.

Topics covered/learned:

- Python OOP.
- Python Networking using socket programming.
- Python data types.
- Python modules - socket,JSON,ast,time.

Overview:

- A socket is created. It is of type ipv4 and protocol followed is TCP.
- The local host ip is found using the gethostbyname() library in the socket module.
- The localhost is bound to a port number. This port number should be the same for the client side also.
- There is a client and a server. Client supplies data to server. Server does some analysis using the data and sends back the analysis to the client.
- The server listens and awaits the service call from client.



. **Fig 1 : Server**

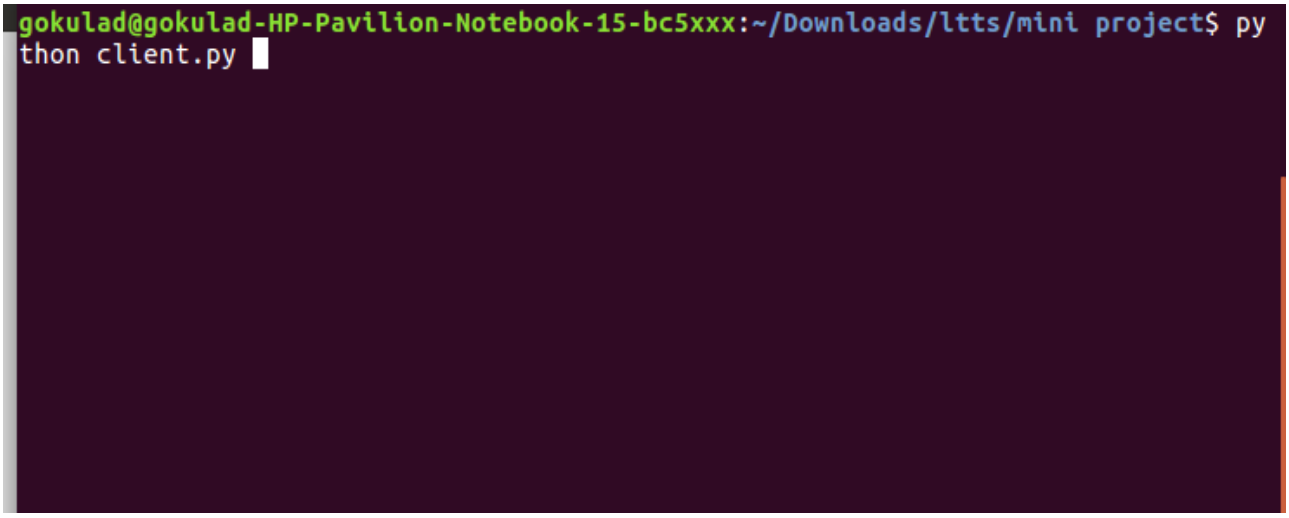


Fig 2 : Client

- The client supplies data. It is shown in figure 3. The input is taken as a dictionary. For sending it via socket it should be serialised. We use a module called JSON for this.

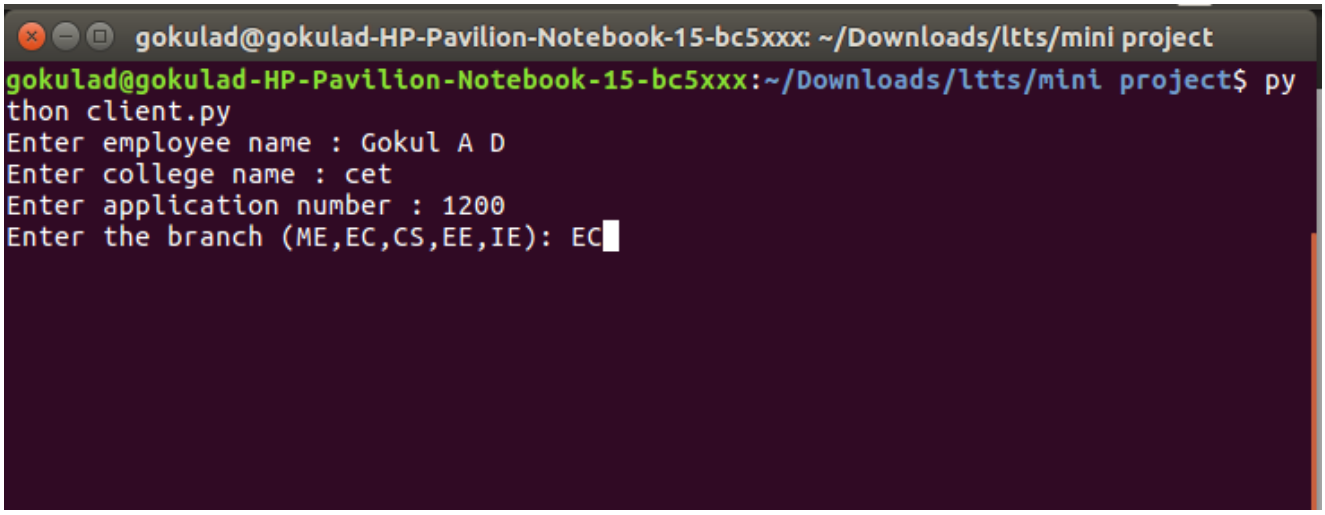


Figure 3

- Server gets this data. It is shown in figure 4. This data is processed. There is one function inside the server that allocates BU according to the engineering branch.

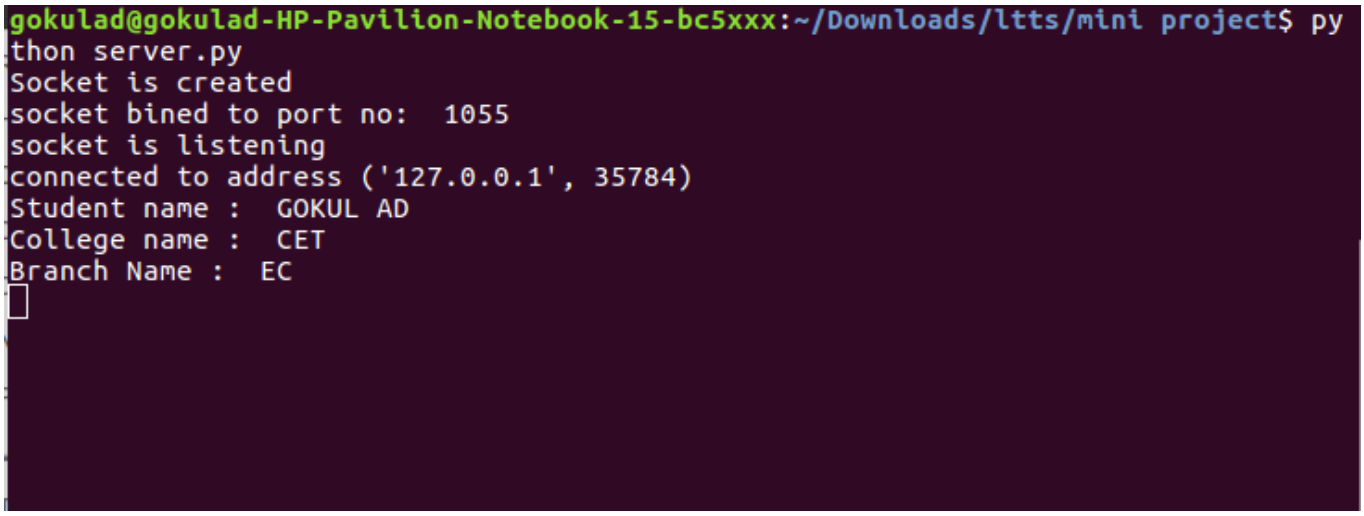


Figure 4

- The server sends back the corresponding BU to the client. It is displayed on the client side.

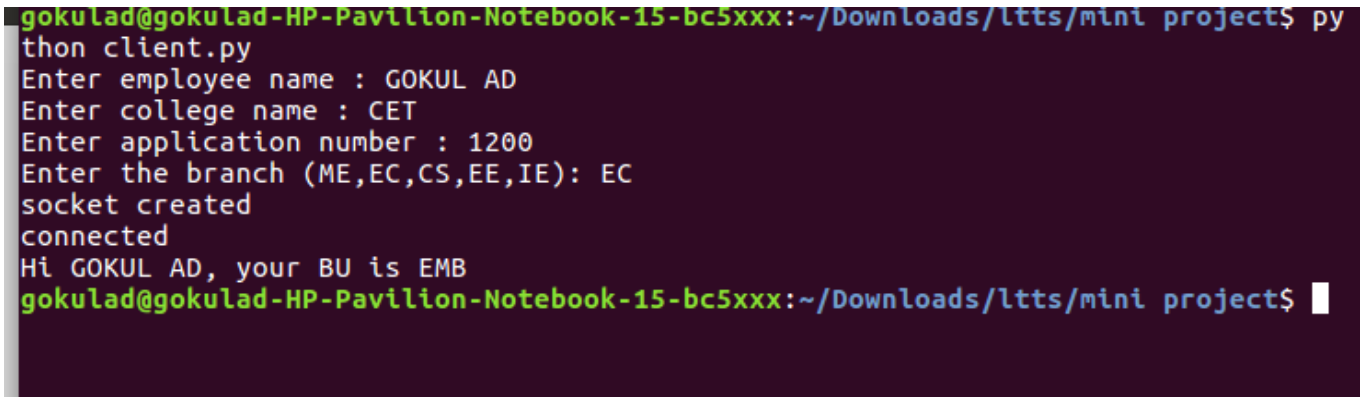


Figure 5

Conclusion

- The use of server and client is analysed.
- Various python data types were exploited.
- Data serialization was done.
- A server-client model was created using python socket programming.