

|  |  |  |  |
| --- | --- | --- | --- |
| Academic Year | 2022 | | |
| Semester | Fall | Winter | Summer |
| Course Code - Name | DCF255 – Data Communication Fundamentals | | |
| Instructor | Jithin Sebastian | | |
| Assessment | Assignment 1 |  | |
| Due Date | Sunday, February 20, 2022 | | |

**Student ID 103094215**

**Student Name Aryankumar Niteshkumar Patel**

**Question 1**

This Assignment is an individual task and worth 5% of the total assignment grade (15%). Answer the following questions and support your answer with diagrams as per your answer and submit it on the link provided on MySeneca under DCF255.

**Question 1**

Many companies today sell services or products. In addition, there are many companies running E-business solutions and various kinds of webserver/database technologies that allow them to conduct business over the internet as well as over other  
networks. Such applications usually represent a client/server scenario in which one or more servers serve multiple clients. What is client/server communication and explain sockets and how sockets are used in client-server communication with a diagram. [7.5Marks]

**Solution**

**Client server was a prevalent network type in the years of 1980’s. Client/Server model was a User centric model, in which a user can use any kind of the software that they need which is best suitable for the particular job they are doing by the newly invented personal computers (in 1979) which the Company/Business provides. In this model, the user can use the shared resources from the server by the help of distributed processing power. Different programs were written to use the distributed processing power and to create the connections between client and server. The exponential growth was observed in the business/company who adopted this model. The server only takes the input and requests from the client, it cannot communicate with the user, rather it only interacts with the client. When user inputs the value or sent request for some data the client captures the user input and sends the request to the server for the information/data that the user has requested. The server responses back to the request and gives the requested webpage from the URL. This was the description about client/server model. Now talking about sockets, A socket is an IP address and a port number, separated by a colon and is used by the local process to make connections to destination hosts and exchange data. In client/server model the client sends an HTTP requests to the server and server response back to the client with an output or an error message. Socket is the address point for the client/server connection and communication. It establishes the connection links between the client and server.**

**Diagram :**

**Question 2**

John Gage has described the IT environment of today as “The network is the computer”. Explain how Cloud Computing is useful for software engineering. [7.5 Marks]

**Solution**

**Nowadays, cloud computing has taken place for developing several Software, Applications and websites. Software engineers and programmers are moving towards cloud computing as it provides the three kinds of services i.e., IaaS (Infrastructure as a Service), PaaS (Platform as a Service) and SaaS (software as a Service). In addition to this, a huge data can be stored on the cloud without many resources. Moreover, there are several factors due to which the software engineers and programmer are moving towards the use of cloud computing such as low maintenance cost, confidentiality, mobility, low risks of data loss, better quality, less overall energy use. Talking about how it works, it provides some space (server farms) to the client for some amount of fees for certain period of time, like a lease. In addition to this, it also becomes easier to release and deploy the new update of any software which is being used by a large community. Mobility is also one of the key reasons to use cloud computing, as one can easily access the information which an individual needs with the special privilege of the industry’s permission. Despite of having many advantages, it also has one disadvantage i.e., the security concerns. Since the client or the company is using the 3rd party cloud service, there are higher chances of the breach. One of the solutions is to hire some cyber professionals in order to maintain the security of the confidential data of the company and keep the cloud environment safe to use to much extent. There are many cloud providers today providing services to the tech giants like AWS (Amazon Web Services), Google Cloud Services Microsoft Azure, IBM cloud. Many big tech companies are using cloud services today, such as Netflix, BMO, Coca Cola, Gameloft etc. uses AWS, companies like PayPal Etsy, Scotia Bank etc. uses Google cloud service, Samsung, Boeing, BMW uses Microsoft Azure cloud service.**

**Question 3**

Assume that you are accessing a Microsoft website from your home computer (desktop/laptop/tablet).

1. Identify and discuss the method used at your home to access the Internet and then connection with the Microsoft web server. [5 Marks]
2. Sketch/draw a network connection from your device to the Microsoft web server. [5 Marks]

**Solution**

**a.**

**b.**