2) CAP stands for consistency, Availability of the system for read and write operations and Partition of the tolerance in the face of the nodes in the system. It states that it is not possible to guarantee all the three desirable properties at the same instant in a distributed system with data replications. whenever there is a server failure for a web Application then at that time high Availabibility is required but cosistency lost at that particular instant.

(3) An Operating System is a system software which acts a bridge b/w user and computer hardware. It allows user to interact with computer hardware. Every computer must have one Operating system to run and perform the operations.

Operating system perform some of the following function:

(i) Process management :- It helps to Os to create and delete processes

(ii) Memory Management :- It shares space to programs on the basis of their need.

(iii) File Management :- It manages all the operations like sharing data, naming data, storing data etc.

(iv) Security : It protect the data and information of a computer against virus.

v) **Input/Output Management:-** One of the main object of any O/s to hide the peculiarities of that hardware devices from the user.

vi) **Device Management:-** Device management keeps tracks of all devices. It is responsible from allocation and deallocation of the devices.

4) (a) **Client-Server Architecture** is a shared computer network architecture where several clients send many request and finally to obtain desired results from server.

There are 4 types of client-Server Architecture
(1) 1-tier Architecature
(2) 2-tier   "
(3) 3-tier   "
(4) N-tier   "

(b) Caching refers to storing information locally to speed communication b/w a client as a web-browser and a server as a web server. The cache can be located on the client side, the server side, or might both.

(c) webSockets is a continuous type connection b/w client and server. It allows both the server and the client to push messages any time without relation to a previous request.

d) Public key → It is an encryption technique which does the task of encrypting plane text into ciphertext.

Private key → It is a decryption technique which basically does the task of decrypting the ciphertext to read the messages.