**OPERATING SYSTEM**

**ASSIGNMENT 01**

***Q1. Examples of computing machines he uses:***

**At home**

* Smart Tv
* Security Camera
* Wifi Router
* Smart Phone

**At Office**

* Biometrci Scanner
* Printer
* Router

**During Commute**

* Self Driving Cars
* Headphones

***Q2. Give the name of operating systems (centralized/distributed), he might be using and the reason to use that particular system:***

**At home:**  Might be using Andriod, Apple IOS, MAC OS, Linux, Smart TV and Windows. Most likely these OS would be centralized as each computing device would be connected to the to the same router.

**At office:** He might be using Windows, MAC OS, IOS and linux(Free BSD, Fedra etc). At work these OS would be distributed as each computer might share data with another one.

**During Commute:** Android, Apex (for self driving cars), IOS. Most likely these OS would be centralized as these OS need to be real time and respond quickly and efficiently.

***Q3. The architecture of machines, he is using (single core, multicore, symmetric, asymmetric processing)and why?:***

**At home:** At home a multicore processing architecture would be used as single core designs are far too slow for use nowadays. In home most probarlily the centralized operating system are used because all devices connect with one router.

**At office:** He may use multiple operating systems like different versions of UNIX(linux, KALI Linux, Ubuntu), Apple, IOS, Windows etc.

In office most probarbily the distributed operating system are used because devices are connected to each other and device are connected via network.

**During Commute:** Android, AAOS(used in Cars) IOS. During commute the centralized operating system are used because OS are realtime and needs to respond quickly and efficiently.

***Q 4. The examples of computing environment he interacts , the purpose of interaction:***

**At home:** At home he would interact with desktop or laptop to use a website or maybe to play games. He would also interact with his smart gadgets like a smart TV to watch shows.

**At office:** At work he would interact withhis Laoptop to perform work related activities, he would also interact with a biometric scanner for authentication purposes.

**At Commute:** During Commute he would interact with his self driving car to drive, he would interact with smart billboards to brouse advertisement.

***Q5. Give example of task automation that can help a banker***

**At home:** A device that changes the password of locks periodically at a set time and sends them to the owner in a secure way.

**At office:** A machine that detects and warns it’s user in case of counterfit bills, this machine could also count the amount of bills to help the bank.

***Q6. List two of the APIs that are used frequently by most of the drivers using mobile services during driving:***

* Google maps to find an efficient router to destination.
* Weather app to check the weather conditons.

***Q7. Differentiate:***

* **Arduino vs Raspberry Pi:** Arduino has a very small amount of memory and it can onlt run one process while you can install on OS on a Raspberry Pi and run several processes on it.
* **IOS vs Andriod:** IOS user an on-page Ui while android uses top now, right side. Android is open source while IOS is not. Android was mainly developed in Java while IOS developed in swift.
* **Emulation vs Navigation with example:** Simulation is duplicating the behovaiour if a device by means if a software and Emulation is recreating the inner working of the behaviour.

For example ( Writing a program that displays a calculator and when clicked on a button it performs the calculation is a Simulator, while an emulator would try to recreate the firmware itself.

***Q8. Why applications are operating system dependent? Explain briefly.***

Applications are OS dependent because each OS has different system calls.

Each Operating System generates different Binary files.

***Q9. Pick one of the applications shown in smart city and discuss its architecture, computing environment,communication needs in terms of operating system concepts.***

* **Architecture:** Every street light has a single core processor and they are all connected to a Multicore processor, like a centralized system.
* **Computing Environment:** Distributed as each street light connected on visulazing with a centralized server PC's. If any street light get damaged it will send a message on a server with a specific IP address to the server.
* **Communication Needs:** All the street lights are connected via a Network, they are operating by that one Multicore processor and turn on/off on specific instructions, like turning on the street light as soon as it's dark outside and disabling the solar panels.