OS-ASSIGNMENT 01

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ROLL NO: 20K-0183 SECTION: B

Question 01

i- Smart TV, automatic washing machine
ii- Personal Computers, Severs etc.
iii- infotainment panel in cars

QUESTION 02

i) Smart TV: Proprietary OS

ii) PC: Windows / Mac
Severs: Linux

iii) Infotainment Panel: Android using Android Auto
iOS using Applecar play

QUESTION 03

i) Smart TV: They generally use an MCU (Micro Controller Unit), modern smart TVs are also based on ARM architecture.

ii) PC: PCs use a CPU (Central Processing Unit) which is capable of performing a variety of computing tasks.
Severs: Severs are generally based on Multi-core CPU architecture.

iii) Infotainment Panel: Power efficient multi-core CPUs are used perform computational tasks in infotainment panels

QUESTION 04

i) Smart TV via remote / infrared signals
Automatic Washing Machine touch panel

ii) PC: via GUI / touch panel / command line
Severs: via command line

iii) Infotainment Panel: via touch panel.

QUESTION 05:

i) **At home:** You can set a timer on TV so that it automatically turns itself off at a specified time.

ii) **At office:** You can set queys to fetch data from millions of records.
Using task scheduler, these queries can be ran at a specified time each day.

QUESTION 06

01) **GPS:**
The cellphone interacts with the geolocation API to fetch different kind of data from GMaps servers and display it on the mobile screen so that the driver can be aware of his whereabouts.

02) **Dashboard Monitor:**
It interacts with various parts of the car and displays information about critical parts of the vehicle to the driver.

QUESTION 07

i) Arduino V/S Raspberry Pi

ARDUINO	RASPBERRY PI
↳ It is based on Atmel Microcontrollers. Arduino UNO uses ATmega328P Microcontroller.	↳ It is based on BroadCom SoC, an ARM Cortex A Series Microprocessor
↳ The MC Chip on board contains the Processor, RAM & ROM. The board contains the other hardware	↳ All necessary components like Processor, RAM, Storage Connectors, GPIO Pins etc are situated on the board itself
↳ It can run only a single task & pre-compiled instructions	↳ Raspberry Pi SBC can perform multiple tasks simultaneously due to its processor & Linux based OS.

ii) iOS v/s Android

iOS	Android
GUI:	
1) Bottom navigate UI	1) Top of screen navigate UI
2) Primary action button is the top nav button on the right side	2) Primary action button is the floating action button in the center
System Development Languages:	
01) Android Apps are developed in Java and Kotlin	01) iOS apps are usually developed using swift.
APIs:	
01) ~~Android~~ Some of Android APIs used in previous versions of Android are Oreo, Froyo, Eclair & gingerbread. most of the instructions are written in Java & Objective-C	01) The iphone API uses Obj-C that allows the developer to interact with the iPhone.

iii) emulation v/s simulation

Emulation	Simulation
01) An emulator mimics both the software as well as the hardware of the target device	01) A simulator is a kind of virtual machine that mimics only the software of the target device
02) Emulation is used for Android devices since it is easy to emulators for iOS apps.	02) Simulation is used while developing iOS apps.

QUESTION 09:

Application cannot access the hardware directly. In order to achieve and perform certain tasks Applications rely on Operating System to get the job done using various APIs.

QUESTION 10:

Topic: TRAFFIC MANAGEMENT

Architecture:

The backend of the traffic system will run of linux-based servers where feed received from various cameras installed throughout the city will be stored.

Communication Needs:

The system will rely on a number of sub-systems to function properly. For example, a secure data delivery system will need to be deployed to send camera feed to the Traffic authority HQs, various ML models can be applied to make various deductions from the recorded footages.