

# EIS ASSIGNMENT - 1

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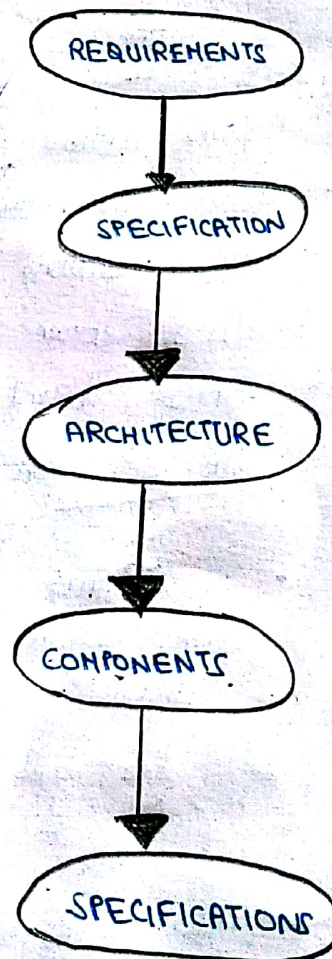
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- CSE

QUESTION :- Write a top-down based approach design for a smart phone case study.

ANSWER :-

## TOP-DOWN APPROACH DESIGN





# CASE STUDY :- SMART PHONE

NAME :- SMART PHONE

PURPOSE :- A consumer grade cellular telephone with an highly efficient and advanced integrated circuit with an operating system. with an efficient operating system, the Smart phone must be able to smoothly run software applications for texting, messaging, Remote control of other devices, gaming, assistance in driving, health monitoring, social media etc.

INPUTS :-

- Power Buttons
- Lock Buttons
- Volume Buttons
- Power Home Buttons
- Reset Buttons
- LED/LCD screen used as display
- Finger print scanner
- An IC on which the phone runs essentially

FUNCTIONS :-

- Allows people to communicate with each other while on the go.
- Allow people from various parts of the world to communicate with each other.
- use of multimedia, which allows the users to see pictures, movies etc as well as share it with each other.
- Allows users to play graphical applications like games.

- Few other applications that run in real time like chatting, voice calling over the internet, calculators, alarm clocks, mail applications, text editors, power point creators etc.

### PERFORMANCE :-

- The performance of a smart phone depends on its various features like battery, RAM, ROM, hardware, screen sensitivity etc. Better and latest USB ports can lead to better and faster charging (like 30 minutes of charge for 1 day power  $\rightarrow$  dash charging), also better LED displays will lead to better picture being displayed.

### MANUFACTURING COST :-

- The manufacturing cost of a smart phone depends on its various features like RAM, ROM, camera etc. It costs 14.5 \$ for 8GB eMMC + 1 GB LPDDR2 NAND flash & DRAM. 29\$ for an 4.5 in 1.280 X 720 LCD display. 9 \$ for a Qualcomm MSM 8226 processor, 7\$ for 5MP + 1.3MP front and back camera, 10\$ for wireless section 8.50 \$ for wireless interface and sensors, 21.75\$ for other costs such as wireless



connectivity, power management, Battery, mechanical parts, ROM contents, manufacturing costs etc which account for a total of 109.75\$ for manufacturing a Moto-G smartphone. The actual manufacturing cost varies and increases as specifications varies, depending on the model of the smartphone to be manufactured.

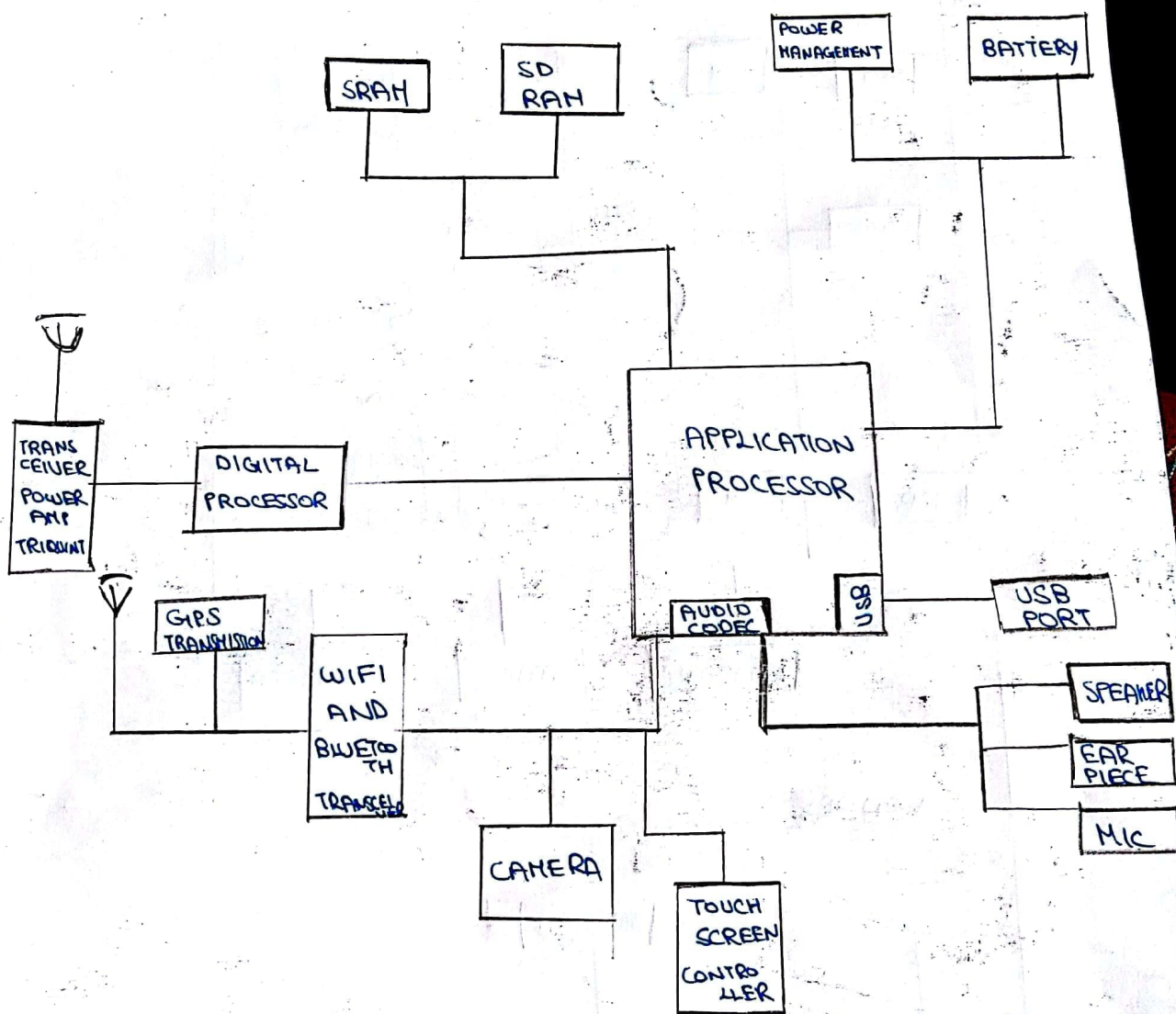
### SPECIFICATIONS :-

- The make or build quality of the smart phone
- size and resolution of display - 4.5in  
1.280x720 etc  
LCD display
- NAND flash & DRAM - 8GB eMMC + 1GB LPDDR2 etc
- Qualcomm MSM8226 processor etc.
- A front and a back camera  
(Primary 5MP Secondary 1.3MP)  
etc
- Storage ROM (32GB/64GB/128GB) etc  
depending on user's wish
- external ROM (or) USB storage slot  
for expanding memory.
- Audio / Speaker Jack.
- Sim slots
- Innovative features (Fingerprint scanner, IRIS

# ARCHITECTURE :

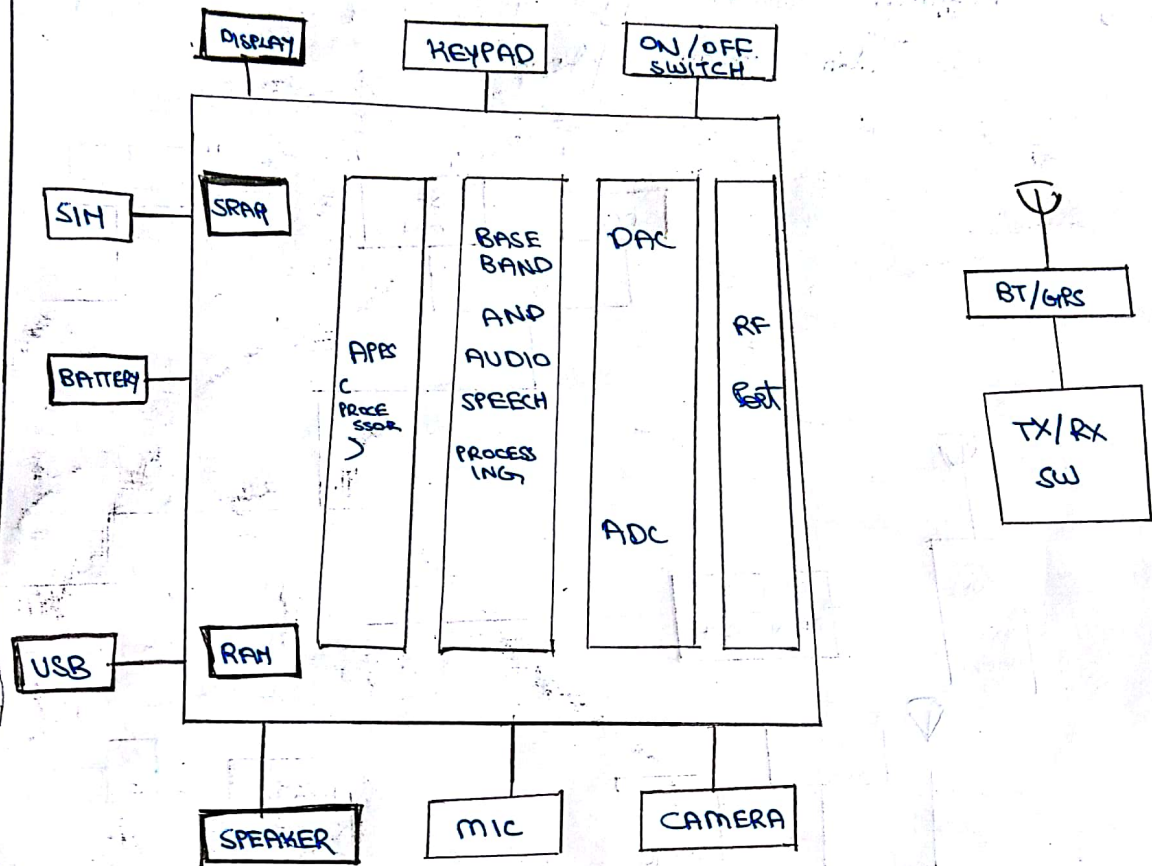
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Diagram below is the overall architecture of the smart phone.

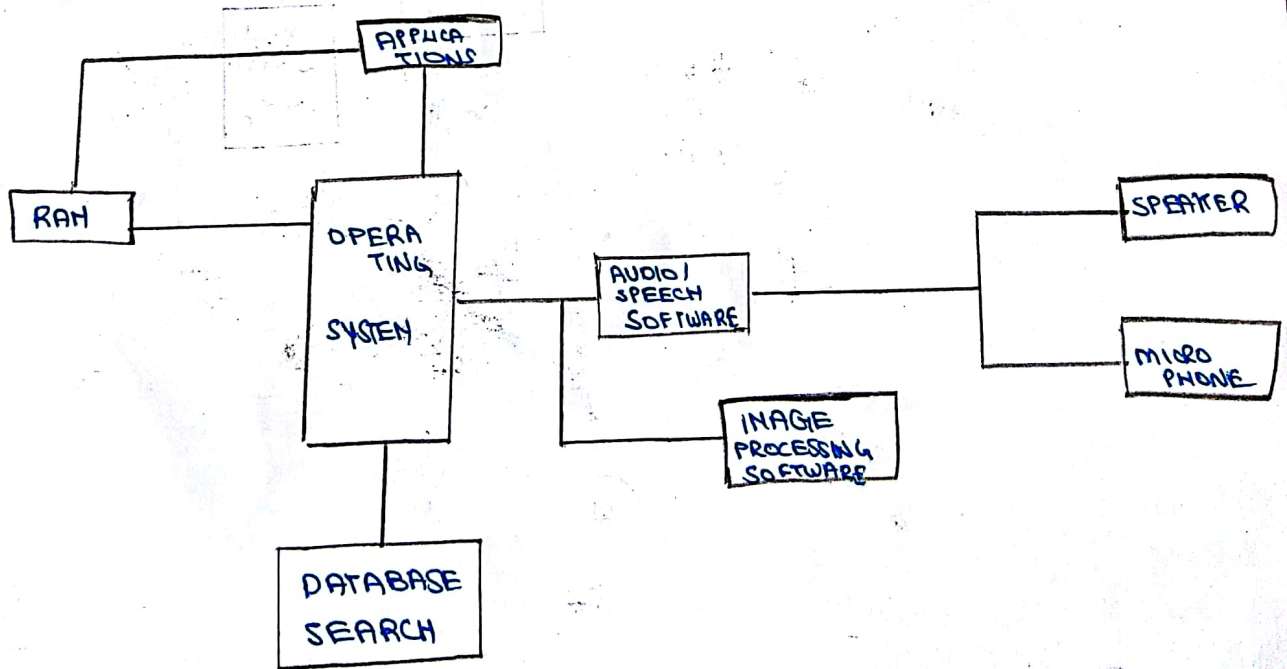




## HARDWARE



## SOFTWARE :-



### COMPONENTS DESIGN :-

- Both software and hardware modules are co-designed together.
- SOFTWARE :- operating system (Android/iOS/Windows), Database, Algorithms, Libraries.
- HARDWARE :- CPU, USB slot, Battery, Display, processor, RAM, ROM.

### SYSTEM INTEGRATION :-

- Integrate all subsystems of the phone to get a whole new system.
- Debug and check for correctness of the system.