Roll no.
106119100

Embedded System Architecture

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CSPC61

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Cycle test - 1

Question ①

Embedded system used in everyday life :

(i) Air Bag control system :

All modern cars have airbag to create driving safer. so the airbag control system. does this implemented it detects a crash using a crash sensor and send an authorization to the explosion system to make airbag blow up

(ii) Automatic washing machine :

Automatic washing machine is an additional example of embedded system. It can enclose an easy user interface, micro controller & different sensor.

(iii) ATM (Automated teller Machine)

It is embedded system which utilizes a crowded computer to set up a network b/w bank computer and an ATM itself. It also has a micro controller to bear both input & o/p opera

Question (5)

Assembly level lang.	High level lang
→ It need an assembler for conversion	→ It need compiler for conversion
→ In this, we convert an assembly level language to machine level lang	→ In this, we convert a high-level lang to assembly lang. to machine level lang.
→ In this mnemonics codes are used	→ In this eng. statemet is used
→ It is machine depend.	→ It is machine -indepen
→ It supports low-level operation	→ It does not support low-level lang.
→ In this, it is easy to access hardwa	→ In this it is difficult to access hardware com

→ In this more compact code is used to implement

→ No compactness

Example of Assembly language program. are IBM PC DOS etc.

and for High level program is C, python etc.

Question (2)

challenges faced when designing an embedded system → Reliability, flexible → process deadline and ability to upgrad

(i) Stability: unexpected behaviour from an embedded software is inadmissible and poses serious risk.

(ii) safety: It is a special feature of embedded softwe due to their primary application associated with life saving functionality in critical environment.

(iii) Security: as Iot devices connecting interly so, security is the most challanges ↓ common

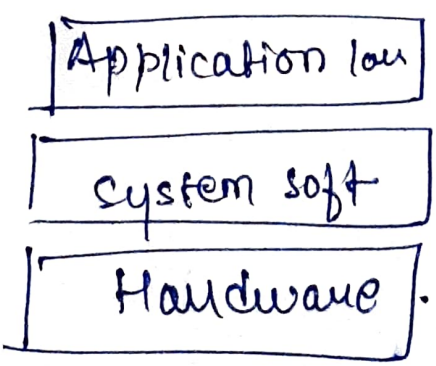
(iv) Design limitation of embedded system
(a) small form factor, (b) low energy,
(c) long-term stable performance without maintenence. are major issues.

(v) compatibility & integrety:
Lack of hands-on experience in implementing and updating their application in IOT env. is also a challenge.

Question (3)

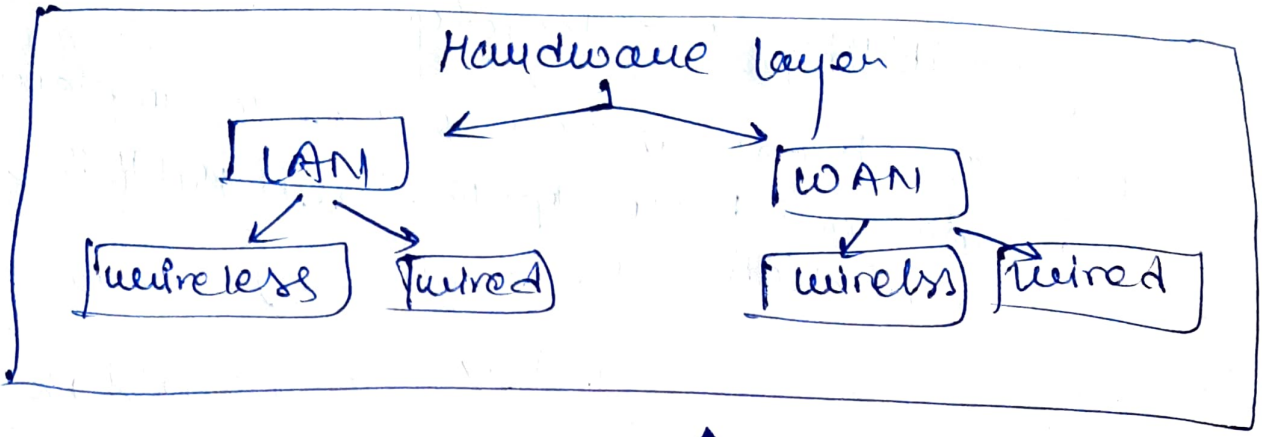
Embedded system model is located in the hardware layer of osi model. The physical layer represent all of the networking hardware physically located in an embedded device.

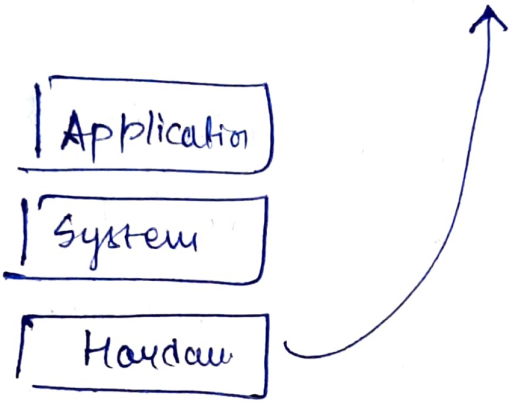
Physical layer protocals defining the networking hardware of the device. are located in the hardware of the embedded system model.

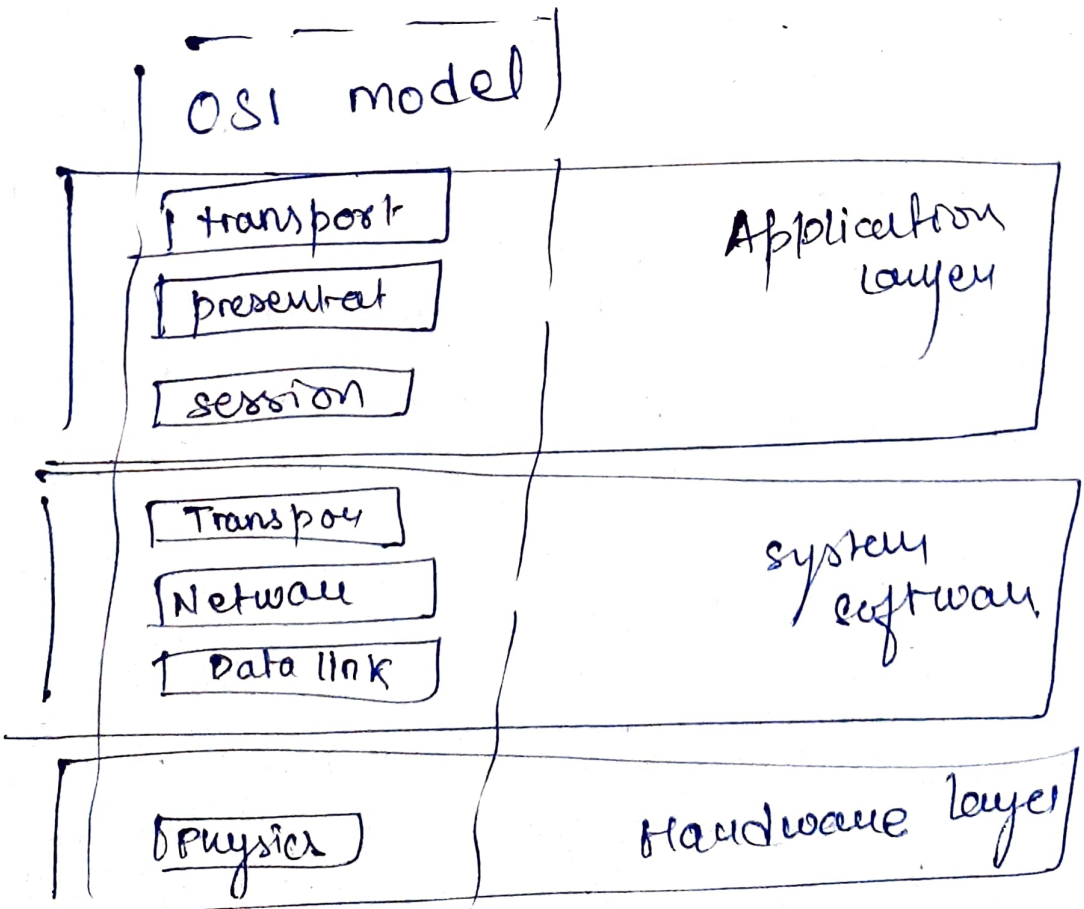


physical layer. protocols in embedd system model.

Physical layer Hardware components. connect the embedd system to some transmission medium







Question (4)

(a) The main differences between JVM. includes.

(i) JVM classes included (with JVM)

(ii) Execute engine : that contains needed component to process java

(iii) Compilation code successfully. JVM pause the intermediate java byte code into machine code.

(b) For implementation of JVM in embedded system:

using hardware like Jile's aj-80 and aj-100 processor, we can implement JVM in embedded system.

Also, Encapsulation technology can be used to bring the JVM into embedded environment.

help to implement for practicality any real time OS.

Question 6

Two type of ISAs that fall under each of the three most common use model.

→ application - specific
- general - purpose.
- Instruction - level parallel.

three common type

(i) stack - the operand are implicitly on top of stack

(ii) Accumulator

one operand is implicitly the accumulate

(iii) General purpose

~~Register~~

(GPR)

All operands are explicitely mention, they are either register of memory location.

Question (7)

Von - Neumann Architecture

It is digital computer architecture whose design is based on "stored programs computer" concept

Here program data & instruction data are stored in same memory

Harvard Architecture :

It is based on concept where there are seperate storage and separate busses for for instruction and data

So,

1.a ⟶ Harvard architecture

1.b ⟶ Von-Neumann architecture.

because, 1.a has separate data code and instruction cache while

1.b has shared RAM & SRAM.