modern CPU have cache
↳ copies parts of main memory to cache
↳ data is delivered faster

RAM
↳ represents actual memory of systems
↳ writable & volatile
↳ memory will be gone when machine is turn off
↳ fast

North-bridge (memory control hub)
↳ connect RAM to CPU
↳ required high speed
↳ many memory related component connect to north-bridge
↳ required high speed

southbridge
↳ connect to CPU through Northbridge
↳ slower compared to northbridge
↳ I/O control hub

Flash ROM → read only memory
↳ LPC bus (low pin count bus)
↳ outdated & slow
↳ ROM contain BIOS (basic input output system)
↳ BIOS contain code to be executed when computer is open

BIOS is only needed once

- CPU needs to write data to I/O device TRUE Eg. Printer - CPU write file data to printer to print
- CPU needs to read data from I/O device TRUE Eg. open files in USB
- I/O devices have their own registers TRUE
- I/O devices are generally slower than CPU memory TRUE

→ TRANSMIT — allow data to be written to output device
RELEIVE — allow data to be written to input device
STATUS — provides info
CONTROL — send commands to controller to change its settings

BOOTING
- load software step by step
- activate component one step after another

BOOTING PROCESS
① • POST (power-on-self-test)
② • Video card
③ • other hardware
④ • Find operating system
⑤ • Boot sector

- System memory is OK
- System clock/timer – running properly?
- Processor OK?
- Keyboard present?
- Screen display memory working ok?
- BIOS corrupted?

Q1. BIOS starts with a post
Q2. The BIOS / UEFI is stored in ROM on the motherboard
Q3. What is the first thing the BIOS will do after successful POST?
Initialise video card & show initial message on the screen
Q4. Give 1 possible reason why 3D graphics are usually not available for firmware configuration.
- Drivers are not available after configuration
-

method 1 : bootable drive (boot sector directly executed)
method 2 : hard disk

EXPLAIN 2 RESTRICTION FOR PC DURING BIOS VS OS starts.

- size of BIOS is restricted to the size of ROM or Flash chips
  = functionality is restricted
-

NAME 2 CRITICISM FOR UEFI.

- Boot restriction prevents users from installing OS of their choice
-

0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

K-map grouping

		BC			
		00	01	11	10
A	0	0	1	1	0
	1	1	1	1	0

K-map solution: **F(A, B, C) = AB' + C**

A'B'C + A'BC + AB'C' + AB'C + ABC

→ A'B'C + A'BC + AB'C' + AB'C + AB'C + ABC — Idempotent OR

→ AB'C' + AB'C + A'B'C + A'BC + ABC + AB'C — Commutative OR

→ AB'(C'+C) + A'C(B'+B) + AC(B+B') — Distributive OR

→ AB' + A'C + AC } the same ?

→ AB' + A'C + AC

→ AB' + C(A'+A) — Inverse OR

→ AB' + C — Identity AND