20/11/2017

**UNIVERSITY OF DAR ES SALAAM**



COLLEGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

(CoICT)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COMPUTER HARDWARE CS 355

ASSIGNMENT 3

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**QUESTIONS**

**1. Mobile processors specifications and limitations compared to personal computer processors and one way to improve phone processor.**

**Architecture**

The architecture involves ways and algorithms on how processors should decide in executing instructions and how to access the memory(ram and cache memory).

Personal computer processors can perform complex instructions such as CISC instructions while phone processors use reduced one RISC which are simple instructions tending to reduce power consumption to meet phone power constrain unlike in personal computers

**Processor Cache**

Cache is the high speed RAM in the processor chip it is what we refer to as SRAM. Processor speed and efficiency depends on the cache memory due to its speed and the size.

Phone processors have low processor cache size as compared to pc processors which means same pc processors with 4MB can be efficient than that of a phone due to size considering more data and instructions in the same capacity .

**Design and structure**

Phone processors due to smaller size requirements have adopted to system on the chip(s) (SOCs) which is comprised of CPU, GPU for graphics processing connection module, DSP, digital signal processor, memory containing RAM and ROM, sensor module .The SOCs insures the size but limits the overheating leading to power issues and limitations unlike the PC processor where the modules are size is not the issue thus overheating is compensated with cooling system thus no power issues.

**Power consumption constrain**

Power influences the performance of the processors greatly. Phone processors are ARM-based processors thus performing simpler instructions (RISC) leading to low power consumption, energy efficiency and low heat production. This is why battery life is regulated, when heat dissipation increases the efficiency decreases. Pc processors are designed to consume large amount of power in contrast to phone processors using CISC, thus they have cooling system incorporated. Which eliminate power efficiency with heat dissipation.

**Way to improve phone processors**

Due to power limitation in heat dissipation keeping the SOCs cooler will increase the phone processor efficiency, this can be done by; Using metal smart phone and tablet covers and cases since they transmit/dissipate heat faster while eliminating rubber covers which are insulators

Mobile processors with smaller fabrication nanometer numbers in cpu technology with the semiconductor tend to dissipate less heat the smaller the better, thus increasing efficiency of mobile processors

**2. In reference to processor and cores describe caches L1, L2, L3**

Cache is the high speed RAM in the processor chip it is what we refer to as DRAM , Cache stores the copies of data and instructions from RAM which are waiting to be used or have been recently used by the CPU. Cache memory has different levels known as L1, L2 and L3. Core is the unit of the processor, it is where thread of instruction is executed, a processor can have more than one core example duo core has two cores.

L1 cache

Li cache is also known as primary cache is located on the dedicated processor core and runs the same speed as the processor, it is the fastest cache on the computer, L1 cache is the first place the processor core checks for data or instruction it is has less storage size than other caches.

L2 cache

L2 cache is the second place the processor looks for data or instruction if there is cache miss in L1 cache, It has larger size and less speed compared to L1 cache. L2 cache is also dedicated to a single core in the processor.

L3 cache

L3 cache is the cache the processor looks for data or instruction if there is cache miss in both L1 and L2 caches L3 is slower than the two but has larger storage size. In duo core processor L3 is the shared cache between the cores; this enables to prevent cache underutilization as one core is idle the other can use the whole of L3 shared cache.

**3. What to do if USB flash is under “write protected”**

Write protected is the mode set on the storage device to prevent data loss through writing any data into it, thus the files cannot be lost even by deleting accidentally making the files read only. To remove this follow the following steps;

* Plug-in the USB flesh in the usb port of the computer,
* With windows operating system go to the command prompt with administrative role
* Type “diskpart”, press enter,
* Type “list disk”, press enter, this will list the disks
* Locate the disk number (#) by its size then type “select disk #” press enter,
* Type “attributes disk” to see the write information on the flash
* Type “attributes disk clear readonly” press enter , the write protected is now removed.

**4. Why do we need cores differentiate between core 2 cores and core i7**

More cores in the processor are better than one core with higher clock speed due to better performance, cheaper and faster , especially in parallel processing for example image and video processing (multi-threaded process).

With one core there increases bottleneck the processor lines up a lot of tasks, thus one task at a time, while with multiple core speed doubles and enables multitasking.

**Differences between dual cores (2) and corei7**

Core i7 is the Intel series of processor with quad cores (4 physical cores), with hyper-threading which is the ability to make the operating system visualizing a single core as two cores thus a core can perform two threads at a time making corei7 having 8 logical cores.

Core i7 has Turbo boost, which is increasing the clock speed CPU frequency when more processing power is needed.This depends on the number of cores in use.

Core i7 has smart cache technology which means the shared level cache is assigned or dedicated to the busy running core than equally dividing to the idle cores thus reducing cache miss.

The Dual core is beaten in all these qualities of core i7 but

* dual core require less power saving battery life
* less thermal output spend less on cooling off
* less cache size

**Core i3 is also a dual core supporting hyper-threading**

**5. One person benefited from social media**

Maxence Melo is the co-founder of social network platform called jamii forums which is popular Tanzanian based, The social network helped him succeed economically with lauching of the jamii media.

Maxence Melo has become a figure of internet rights to the consumers/clients since his denial to disclose the credentilas of the jamii forums which are ment to be secret. Maxence Melo is a public motivational speaker on issues concerning social media rights and appropriate usage to get the best out of it.