

1. Identify the components of the Raspberry Pi B+.
 - a. Display, USB, CPU/RAM, Power, Ethernet Controller, Camera, HDMI, Ethernet
2. How many cores does the Pi CPU have?
 - a. The Pi is Single Board Quad-Core Multicore CPI
3. Three differences between ARM and x86:
 - a. ARM uses a smaller amount of instructions than x86. Usually meaning that the ARM IS allows more instructions to execute in few clock cycles. However x86 can execute a larger variety of instructions in less clock cycles.
 - b. This usually allows ARM to perform on less power while x86 is more power thirsty
 - c. ARM generally has less transistors than x86
4. What is the difference between sequential and parallel computation and identify the practical significance of both.
 - a. Sequential computation must run each instruction one by one and can not execute them at the same time. This breaks a problem into “discrete” steps and serializes them into instructions executing only one at any given time. Can be generally slower but has the advantage of leading directly to the solution through a traceable path. If only a single core is present parallel computation runs the risk of being slower than a parallel one.
 - b. Parallel computation is the dividing of steps into “discrete” instructions to be done simultaneously. These processes are generally run by computers with multiple processors and or by linking computers together via network. Almost all computers today are parallel in a hardware sense, except maybe your microwave or toaster.
5. Identify the basic form of data and task parallelism.
 - a. Data Parallelism is formed by distributing data for one task across a set of processors.
 - b. Task Parallelism in contrast brings different tasks to different processors. Pipelining is a type of task parallelism that divides a problem into sub-problems
6. The Difference between processes and threads:
 - a. Processes are a part of execution.
 - b. Threads a breaking up of the processes.
7. What is OpenMP and OpenMP pragmas?
 - a. OpenMP is a API that allows multiprocessing.
 - b. OpenMP pragmas are compiler directives.
8. What Applications benefit from multicore?

- a. Graphics in games and animation
 - b. Sound editing applications
 - c. Web browsers
 - d. Networking System Applications
- 9. Why not single core?
 - a. Moore's law has hit a wall with clock speed
 - b. Better memory management
 - c. Usually faster, when time is expensive and space is cheap
 - d. Allows a problem with one process to not bottle neck all processes