**Review questions chapter 2**

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| 1. **What is a stored program computer?**   A computer that stores a representation of the program in memory alongside the data. The computer can read the program from memory, instead of being like the ENIAC with the requirement of hard wiring the program (literally).   1. **What are the four main components of any general-purpose computer?**   The four main components are main memory, arithmetic and logic unit, control unit, and input/output (I/O).   1. **At the integrated circuit level, what are the three principal constituents of a computer system?**   They are gates, memory cells, and interconnections among the elements.   1. **Explain Moore’s law**.   There is a doubling of the number of transistors on a chip every year (now about every 18 months). It is something that has continued since Moore made his observation. The cost of the parts has also remained consistent even with the increase in density. Computers have been able to become much smaller due to this as well. The chips are the same size (form factor), though the number of parts on the transistor has majorly increased.   1. **List and explain the key characteristics of a computer family**.   Similar or identical instruction set: Different computers in the same family could use the same or similar instruction sets. Lower-end machines may contain a subset of the instruction set of higher-end machines. This would make software move up the chain, though software written for a higher-end machine might not work on a lower-end system (due to missing instructions).  Similar or identical operating system: The OS may be shared by the systems of the same family, though there may be more high-end features in the OS of higher end machines.  Increasing speed: As one moves though the models of the family, the higher the end of the machine, the faster the speed. (Increase in rate of instruction execution).  Increasing number of I/O ports: There is an increase in the number of ports going from lower end to higher end.  Increasing memory size: Size of the main memory increases going from lower end to higher end.  Increasing cost: Cost of the computers goes up when going from lower end to higher end.   1. **Increasing cost**: **What is the key distinguishing feature of a microprocessor?** 2. They contain all the components of a CPU on a single chip. 3. **Given the memory contents of the IAS computer shown below**,   Address Contents  08A 010FA210FB  08B 010FA0F08D  08C 020FA210FB  **show the assembly language code for the program, starting at address 08A. Explain what this program does.**  **Answer**: |