Quiz #1

1. What do “sufficient conditions” guarantee?
    a. **A sufficient condition guarantees that the aimed goal is guaranteed to be achieved if the sufficient condition is met.**
2. What do “ necessary conditions” guarantee?
    a. **A necessary condition guarantees that the aimed goal is guaranteed never to be achieved if the necessary condition is not met.**
3. If a sufficient condition is not satisfied, what conclusion can we draw?
    a. **If a sufficient condition is not satisfied, we cannot conclude anything since the aimed goal may or may not be achieved.**
4. If a necessary condition is satisfied, what conclusion can we draw?
    a. **If a necessary condition is satisfied, we cannot conclude anything since the aimed goal may or may not be achieved.**
5. What are the two primary roles of operating system?
    a. **A middleman between you (as a user) and computer hardware.**
        i. **Operating as an extended machine**
    b. **The government in your computer (the agent that allocate resources)**
        i. **Operating as a resource manager**
6. What are the typical three structural layers in a computer system?
    a. **Application Programs**
    b. **Operating System**
    c. **Computer Hardware**
7. What is the definition of an “extended machine”?
    a. **An imaginary computer (as a hardware computer) that can be manipulated directly by high-level user commands by abstraction offered by an operating system.**
8. What does “high level commands” mean (in computer science in general)? What does “low level commands” mean?
    a. **High-level commands are understood by humans. High-level commands go through the OS and translated into low-level commands for the computer hardware to understand. Low-level commands are understood by the computer hardware not humans.**
9. What are “multi-tasking systems”?
    a. **Multiple programs loaded and then using context switching for programs.**
10. What is “context switching”?
    a. **Switching the processor from one program to another one.**
11. What was the primary disadvantage and advantage in “Pre Operating System (no OS)”? Mention at least (primary) one for each of the primary disadvantage and advantage.
    a. **Advantage**
        i. **Hardware resources are all yours = extremely fast!**
        ii. **Memory space for OS is not needed**
    b. **Disadvantage**

    i. **A user can not leave the computer room and relax in his/her office.**
    ii. **The price of computer hardware was extremely expensive.**
    iii. **Once your program is finished, you have to save the outputs and cleanup the computer system immediately.**

12. What is “batch system”? Show how a computer host with a typical batch is organized.
    a. **The program loader monitors progress of program execution**
    b. **As soon as a program is completed, the program loader loads the next**
    c. **As long as programs (‘jobs’) exists, a computer keeps running**
13. Briefly describe what problem in “pre-operating system” a batch system fixes and how.
    a. **Batch system has a program loader.**
    b. **A computer system continues to execute programs, one at a time. The user no longer has to load programs.**
14. What are the two primary problems in batch system?
    a. **CPU utilization could be low**
    b. **Computer does not fix programs that has bugs**
15. What problem in “batch system” do “multiprogramming (multitasking) OSes” fix and how?
    a. **More programs can run at a time instead of one.**
    b. **Programs are automatically loaded.**
16. What problem in “multi-programming (multitasking) OSes” do “multitasking timesharing OSes” fix and how?
    a. **Multiple programs can be in memory at the same time.**
    b. **While a program does not need the CPU, CPU can be assigned to another program.**
    c. **CPU utilization will be improved**
    d. **A small program that was submitted after big ones could finish before the big ones.**
    e. **Average waiting time will be improved.**
17. Look up the meaning of the following word using your textbook: “degree of multitasking.”
    a. **???????**