Physics 2660

Assessment

Instructor: Christopher Neu   Name: ______________________________
Results: ______________________   Pledge: ____________________________
          ______________________   ____________________________
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Print your name, class (PHYS 2660), and date on the Scantron Answer Sheet. Also, this is a pledged exercise so write out The Pledge on the back of the Scantron Answer Sheet. You must use a #2 pencil for filling in the Scantron.

Print in the letters/numbers of your UVa computing ID (for example, mine is ccn4g) and fill in the dots on the Answer Sheet starting from the left-most bubble. This is your computer user name, NOT your student ID number. Make sure you have one and only one bubble filled out in each column, no spaces.

Assessment is graded out of 30 points. There are 30 questions.

Don’t cheat. No outside resources are allowed. Just you, your brain, and your number 2 pencil.
Section I: General

1. Which piece of computer hardware has the fastest access to temporarily-stored data?
   a. Hard drive
   b. Cache
   c. Memory
   d. Solid state hard drive

2. The main component of an operating system, managing memory allocation, I/O, prioritization of processes, is
   a. CPU
   b. kernel
   c. filesystem
   d. process manager

3. In a computer, which bus handles all slow connections among hardware components?
   a. Northbridge
   b. PCI bus
   c. Southbridge
   d. Universal Serial Bus (USB)

4. Which would one run to use a secure interactive connection with a remote machine?
   a. telnet
   b. ssh
   c. scp
   d. rlogin
5. Which computer component offers the slowest data retrieval during program execution?
   a. Hard drive
   b. Cache
   c. Wireless
   d. Memory

6. Which computer component allows convenient temporary fast-access storage of reasonably-large amounts of data needed during processing commands?
   a. Thumb drive
   b. Hard drive
   c. Motherboard
   d. Memory

7. One of the main CPU makers in the world is:
   a. Intel
   b. eXcieon
   c. Google
   d. CRX

8. The main intermediary between the user and the operating system is the
   a. kernel
   b. shell
   c. mouse
   d. display
Section II: Linux

9. I want to see the files in my current directory in a Linux filesystem sorted alphabetically, displaying information on the last time accessed, permissions and ownership. Which command is best?
   a.  `ls -l`
   b.  `ls -t`
   c.  `ls -r`
   d.  `ls -a`

10. In Linux, which command displays to screen the current directory I am accessing?
    a.  `dir`
    b.  `cd`
    c.  `ls`
    d.  `pwd`

11. I want to rename a file from `filename1` to `filename2` in my current directory. Which is best?
    a.  `rm filename1 filename2`
    b.  `cp filename1 filename2`
    c.  `mv filename1 filename2`
    d.  `rename filename1 filename2`

12. In Linux, how does one navigate the filesystem to the directory one level “up” or “back” from the current directory?
    a.  `cd ..`
    b.  `cd ~`
    c.  `cd HOME`
    d.  `cd ./`
13. Which is used to securely copy files from one machine or from one user to another?
   a. ftp
   b. scp
   c. ssh
   d. xming

14. At the command line, what is best command for understanding the syntax of and options for the ‘ls’ command:
   a. help ls
   b. man ls
   c. ls -help
   d. ls?

15. What is the best command to execute to compile a file called myCode.cpp into an executable called myTest?
   a. g++ -O -Wall -o myTest myCode.cpp
   b. g++ -O -Wall -o myCode.cpp myTest
   c. gcc myCode.cpp myTest
   d. make myCode.cpp >> myTest

16. What Linux command would one use to view the previous commands issued on this machine?
   a. revise;
   b. hist;
   c. history;
   d. tar;
Section III: Elements of C

17. What element should accompany any user-defined function in C?
   a. variable constants
   b. function prototype
   c. function arguments
   d. function literal

18. In C, which is a conditional repetitive execution statement?
   a. do-while structure
   b. if/else statement
   c. switch/case statement
   d. condition ? statement : statement

19. What is the one element that every C program must contain?
   a. function prototype
   b. main()
   c. include statements
   d. variable definitions

20. In C, what is the minimum number of times a “do while” loop is guaranteed to execute?
   a. 0
   b. variable
   c. 1
   d. none of these
21. How much memory space does a variable of type `float` require in C?
   a. 8 bits
   b. 4 bytes
   c. 8 bytes
   d. 4 bits

22. Which operator should one use to test for equivalence between two numerical values in a conditional ‘if’ expression in C?
   a. =
   b. ?
   c. :=
   d. ==

23. What is the best way, in the context of a C program, to define a floating-point number called PI with impossible-to-change value 3.14?
   a. `#define PI 3.14`
   b. `float PI = 3.14;`
   c. `const double PI = 3.14;`
   d. `static double PI = 3.14;`

24. What are the two species of functions in C?
   a. pass-by-call and pass-by-value
   b. pass-by-value and pass-by-reference
   c. pass-by-reference and pass-by-pointer
   d. pass-by-call and pass-by-reference
25. In conditionals in C, if the condition is true, the value assigned to the conditional statement is
   a. 0
   b. 1
   c. 1.00
   d. some non-zero value

26. Which of these is not a native variable type in C?
   a. string
   b. char
   c. int
   d. double

27. Consider this for loop. How many iterations will be executed, assuming no manipulation of the counting index i within the body of the loop?
   
   ```c
   for(int i=100; i>0; i--)
   ```
   a. 0
   b. 100
   c. 99
   d. 101

28. How does one define a pointer called pData that will point to a double?
   a. *pData;
   b. double &pData;
   c. double *pData;
   d. pData = &num;
29. Who is credited with being one of the original developers of the C programming language?
   a. Bill Gates;
   b. Linus Torvalds;
   c. Dennis Ritchie;
   d. Steve Jobs;

30. In C, what is the best way to store the value of a variable of a given type in a variable of a different type?
   a. implicit cast;
   b. global definition;
   c. explicit cast;
   d. pointer access;