Introduction to Programming and Logic   Name: _____
Exam 1   Algorithms

True or False: (16 points)

True   1. Software, such as spreadsheets, word processing programs and games, is referred to as application software.

True   2. The three major operations performed by computers are input, processing, and output.

False   3. Nonvolatile memory is memory that is temporary. The data is lost if power is lost.

True   4. Pseudocode is a tool that is used to plan the logic for your program.

False   5. The first step in the Programming Development Cycle is to write the code.

False   6. The value of a constant can be changed throughout the program.

True   7. A module ends with a return statement.

False   8. Abstraction is the term used for naming variables.

False   9. The declarations of variables and constants appear at the end of the program.

True   10. It is good practice to give variables and constants meaningful names.

False   11. Flowcharts are developed after the code is written to test and debug the code.

True   12. It is good programming practice to initialize all variables.

True   13. All programming problems can be solved using three structures, sequences, decisions and loops.

True   14. The Programming Development Cycle is repeated during the Maintain the Program phase of the cycle.

True   15. The data type of a variable identifies the possible values for a variable, how it is stored and what operations can be performed on it.

False   16. A program comment is a message that is displayed on a monitor to ask for a response from the user.

Multiple choice questions: (12 points) Circle the best answer.

1. What does a declaration provide for a variable?
   a. a name
   b. a data type
   c. both of the above
   d. none of the above

2. The value 3 is a:
   a. numeric variable
   b. numeric constant
   c. string variable
   d. string constant

3. Which of the following is a reason to use modularization?
   a. Modularization avoids abstraction
   b. Modularization reduces overhead
   c. Modularization allows you to more easily reuse your work.
   d. Modularization eliminates the need for syntax

4. Which basic structure has two variations?
   a. Sequence
   b. Decision
   c. Loop
   d. All of the above

5. Placing a structure within another structure is called:
   a. stacking
   b. untangling
   c. building
   d. nesting

6. What is the following shape used for in a flowchart?
   a. input
   b. processing
   c. output
   d. a and c
   e. all of the above

7. Which type of statement is used as a loop in pseudocode?
   a. if-then-else-endif
   b. ==while-do-endwhile==
   c. assignment
   d. return

8. Which of the following is NOT a reason for enforcing structure rules in computer programs?
   a. Structured programs are easier to understand
   b. Other programmers will expect programs to be structured
   c. ==Structured programs are shorter==
   d. Structured programs can be broken into modules easily

9. Unstructured and hard to follow program logic is called:
   a. ==Spaghetti code==
   b. Snaking code
   c. Stringy code
   d. Gnarly code

10. Which of the following errors is a LOGIC error?
    a. ==Forgetting to input a value before using it in a calculation.==
    b. Forgetting the } at the end of a loop
    c. A missing semi-colon
    d. None of the above

11. As compared to procedural programming, with object-oriented programming, _____
    a. You do not accept input
    b. You cannot use some languages, such as Java
    c. ==The programmer's focus is on the objects that are being processed.==
    d. Calculations are created automatically

12. The equals sign is also called the following?
    a. ==Assignment operator==
    b. Input indicator
    c. Variable
    d. None of the above

Put the steps of the Programming Development Cycle in the correct order by labeling them from 1 to 7: (7 points)

7 -   Maintain the Program

2 -   Plan the Logic

6 -   Put the Program into Production

5 -   Test the Program

4 -   Translate the Code

1 -   Understand the Problem

3 -   Write the Code

Short Answer

1. Give an example of syntax error. (1 point)

Missing semi-colon; using a keyword as a variable; misspelling something...

2. Explain why you should use pseudocode or a flowchart to plan your program's logic. (2 points)

Generally, helps you plan, helps you to understand what code you have to write, helps you to document your algorithm, helps you to explain to others, helps you to find errors, keep code structured...

3. List 3 features of good programming design. (3 points)

Using appropriate comments, meaningful variable and module names, structured, functional cohesion in modules, using pseudocode or flowcharts to plan...

4. Explain the difference between a constant and a variable. (2 points)

Constant is declared and given a value and never changes. A variable's value can change throughout the program

5. Explain what happens in the following assignment statement: x = y * 3; (2 points)

The value in the variable y is multiplied by 3 and stored in the variable x. y is not changed.