Data Types and Input/Output Practice Problems

# True/False Questions

1. count-- is equivalent to count = count + 1.
2. count++ is equivalent to count = count + 1.
3. Keywords can be used as variable identifiers/names.
4. Escape sequences are used to print special characters such as \ and “.
5. Constants are used to make program maintenance easier.
6. Abstraction refers to the logical grouping of concepts or objects.
7. Literals are values that are entered directly into code.
8. Logical operators are evaluated before relational operators.
9. Strings are a primitive data type.
10. Brute force is a good approach to programming.
11. You must declare and initialize a variable in two separate steps.
12. When assigning a value to a variable, the variable must be on the left of the assignment operator (=).
13. The escape sequence character (\) is used to print special characters in an output string.
14. Logical operators are evaluated before relational operators.

# Multiple Choice Questions

1. Which of these is not a property of a good algorithm?
2. Unambiguous
3. Complete
4. Precise
5. Complex
6. What is the shortcut operator to add one (1) to a variable?
7. ++
8. + +
9. \*\*
10. @@

List the eight simple or primitive data types and their range of values:

# Programming & Problem-Solving Questions

1. Evaluate the following pseudocode and write its exact output:

* flag = false

output = flag OR true

PRINT (“Output = “ + output)

* PRINT(“Your total points is \n\t” + 21 + 21);
* double a = (int) (50.0 / 10.0);  
  PRINT(“Answer a = ” + a);
* PRINT(“Output = \t\t” + (10+20));
* int b = 28/2%4;

PRINT(“Answer is b = “ + b);

* BEGIN MAIN

CREATE a, b, c

PRINT “Please enter side a of the triangle: “

READ a

PRINT “Please enter side b of the triangle: “

READ b

PRINT “c = “ + square root of ((a\*a) + (b\*b))

END MAIN

1. Declare three integer variables called A, B and K
   1. initialize A to 20 and B to 40
   2. assign the sum of A and B to K.
2. Declare two integer variables called V and W
   1. initialize V to 50
   2. assign V2 to W
   3. then printout the value of W with this label: “The value of W = “
3. Declare a variable of type double (call it input) and initialize it to 123.45
   1. change its value by dividing it by 5
   2. finally assign the value of variable input to an integer variable (call it int\_value) using explicit type casting. Make sure all variables are declared.
4. Declare a Boolean variable (call it flag) and initialize it to false
   1. assign the expression ‘A’ < ‘a’ to variable flag
   2. finally print out the value of variable flag with this label “Flag = “
5. Declare an integer variable (call it value)
   1. initialize the variable with an input from the user
   2. check if the variable (value)is even or not
   3. finally, print proper message such as “value is even” or “value is odd”.
6. Write a complete program (including MAIN) that prompts the user for a day of the week and a color, reads those values in, and prints out the following message: "On [day]s we wear [color]."
7. Write a complete program (including MAIN) that prompts the user for their name and a number, reads those values in, and prints out the following message:  "I put a spell on you, [name], and now you're mine.  It's been [number] years, right down to the day.  Now the witch is back!"
8. Write a complete program (including MAIN) that prompts the user for a number and their name, reads those values in, and prints out the following message:  "Open pod bay [number] doors, Hal.  I'm sorry [name].  I can't do that."
9. Write a complete program (including MAIN) that prompts the user for a number and an object, reads those values in, and prints out the following message:  "For the [number] time, don't panic and carry a [object]."
10. Write a complete program (including MAIN) that prompts the user for their name and a direction, reads those values in, and prints out the following message:  "It's just a jump to the left, [name].  And then a step to the [direction]."
11. Write a complete program (including MAIN) that prompts the user for their name and a number, reads those values in, and prints the following message:  "Feed me [name].  My leaves are dry, and I haven't eaten anyone in [number] days!"
12. Write a complete program (including MAIN) that prompts the user for their name and their favorite color, reads those values in, and prints out the following message:  "Right.  Off you go, [name].”
13. Write a complete program (including MAIN) that prompts/asks the user for a number between 0-255, reads in that number, and coverts it to a number between 0.0-1.0 (e.g.: 0 becomes 0.0, 255 becomes 1.0, and 128 becomes 0.5). Note, this program is only a few lines long.
14. Write a complete program (including MAIN) that prompts/asks the user for a velocity of an object (in miles per hour) and a time (in hours), reads those numbers in, and prints out the total distance the object has moved.
15. Write a complete program (including MAIN) that prompts/asks the user for a width and a height of a rectangle, reads in those numbers, then prints out the perimeter of the rectangle.
16. Write a complete program (including MAIN) that prompts/asks the user for a base and a height, reads in those numbers, and prints out the area of a triangle (where A=1/2bh)