MSheet 5 (Week 6)

CSC 111 Programming Fundamentals (Solving)

1. Write a program that calculates and prints the roots of the quadratic equation. The program must check if they are real or complex numbers and print out the results in a good form; for example: The roots of the equation having a=?, b=?, and c=? are complex and they are (?+j?) and (? – J?) ; where ? is any real number.
2. Write a program that inputs three real numbers (must be positive) from the keyboard and prints the sum, average, product, smallest and largest of these numbers. (Work out the algorithm of the max and the min without using for loops). The screen dialog should appear as follows:

Input three different integers: 13.0 27.0 14.0

Sum is 54.0

Average is 18.0

Product is 4914.0

Smallest is 13.0

Largest is 27.0

1. [To be explained by the TA’s] Write a program that calculates and print f(x) =ax3+bx2+c. The programs must check that a> 0 and 5.2<b<10.5. The programs display the values of f(x) for x=2, 3 and 5, in a tabular format. Do not use else statement for testing the inputs. Do not use any cmath function. The program must display the error message and end if the inputs are invalid. [Hint: think of using return statement and nested if statements]
2. Write a program that inputs a four-digit integer, separates the integer into its digits and prints them in reverse order separated by two spaces each. [Hint: Use the integer division and remainder operators.] For example, if the user types in 6735, the program should print:

5 3 7 6

1. Write a program that calculates the surface area and volume of cubes with face lengths of 1 to 3 cm. Use tabs to print the following neatly formatted table of values (Do not use for loops or user defined function):

Face length Surface area Volume  
of cube (cm) of cube (cm^2) of cube(cm^3)  
1 6 1  
2 24 8  
3 54 27  
4 96 64

1. Complete:
2. Every C++ program begins execution at the function Main .
3. Lines that begin with # are processed by the preprocessor before the program is compiler
4. // indicates that the remainder of each line is a comment.
5. The equality operator is == while the assignment operator is = .
6. A(n) return 0 indicates the end of function main.
7. The object used to print information on the screen is cout .
8. A C++ statement that makes a decision is if else.
9. Most calculations are normally performed by statements float .
10. The object inputs values from the keyboard cin.
11. State whether each of the following is true or false. If false, explain why. (Assume the statement using std::cout; is used.):
    1. Comments cause the computer to perform an action when the program is run and they’re not ignored by the C++. False

As Comment ignored by the C++ when program is run and it only for help developer to remember her code

* 1. When a backslash is encountered in a string of characters, the next character is combined with the backslash to form an escape sequence. True
  2. C++ programs begin executing from the first encountered function. False

As C++ programs begin executing from main function

* 1. All variables must be given a type when they’re declared. False

As You Can Declare Variables with DEFINE and auto without data type

* 1. Exactly one function in every program must be named main. True
  2. A string literal’s characters normally print exactly as they appear between the double quotes. True
  3. The return statement must be written at the end of main. False

No as Program will be work without return statement but the best brackets should have return

* 1. The arithmetic operators \*, /, %, + and – all have the same level of precedence. False

because operator % has higher precedence than (/ , \* , +)

because operator / has higher precedence than (\* , +)

and operator \* has higher precedence than +

* 1. Syntax errors are also called compiler errors, compile-time errors or compilation errors, because the compiler detects them during the compilation phase. True
  2. C++ is a case sensitive language. True
  3. The following are all valid variable names: findSum2(True), \_findSum2 (True),
  4. find\_Sum2(True), \_2findSum(True), 2\_findSum(False), hello(True), abcOne(True), var1.xyz.(False)
  5. The statement cout >> " Hello World"; is a typical example of output to a screen. False

As it have syntax Error it must be cout << “Hello World”;

* 1. Parentheses may be used to group expressions. True
  2. The following are all invalid variable names: \_1a., 1\_a, a\_1, $1a. False

As number 2 are invalid variables name

1. Which of the following statements contain variables whose values are replaced?  
   a) cout<< x << y;  
   b) i = i + j;  
   c) cout << **"x"**;  
   d) cin>> x;
2. State the order of evaluation of the operators in each of the following C++ statements and show the value of x after each statement is performed.  
   a) x = **3** + **3** \* **4** / **2** - **2**;

4 / 2 = 2

3 \* 2 = 6

6 + 3 = 9

9 – 2 = 7

Result = 7  
b) x = **4** % **2** + **2** \* **4** - **2** / **2**;

4 % 2 = 0

2/2 = 1

2 \* 4 = 8

8 -1 = 7

Result = 7  
c) x = ( **2** \* **4** \* **2** + ( **9** \* **3** / **3** ) );

2 \* 4 \* 2 = 16

3 / 3 = 1

9 \* 1 = 9

16 + 9 = 25

Result = 25

Wishing you all the best.

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