SWE20004 - Week 4 Lab

(Need to submit Task 4.9)

Task 4.1 What is wrong with this switch statement?

```
int i;
int a = 127
cin >> i;
switch(i)
{
  case a :
          //statements
          break;
  case a++ :
           // statements
           break;
}……
```

Task 4.2 What is wrong with this control statement?

```
double x   = 0.0, y;
y = 3. /  4.*4.0
if (y ==  x)
{
  cout <<   "equal";
}
else (y != x)
{
cout << "not equal";
```

Task 4.3 Write the code for safely comparing these floats:

```
float number1, number2;
//assume the numbers have been assigned values
//here
if (_____________________________________)
{
     //do something
}
```

Task 4.4 At the indicated lines, indicate which variables are in scope:

```
1  #include <iostream>
2  using namespace std;
3
4  int a=1, b=2;
5
6  int main()
7  {
8     int c=23;
9     for (a = 0 ; a < 5 ; a++)
10    {
11      int e=1;
12      if (e != 4)
13      {
14          if (e==0)
15          {
16             int f=12;
17          }
18      }
19      if (e ==3)
20      {
21         c = a + b / c;
22      }
23    }
24 return 0;
25 }
```

line_no	a	b	c	e	f
4					
8					
9					
11					
12					
14					
16					
19					
21					
24					
25					

Task 4.5 Write a guard for this code.

The code evaluates the square root of a number x. The program will crash if x is a negative number. Add code which will prevent the crash.

```
double x = 1;

cout << "Square Rooter" << endl;
 cout << "Enter 0 to exit" << endl;
cout << "Enter a positive number: ";
cin >> x;
//add code here




cout << "The square root of " << x
            << " is " << sqrt(x); //may crash here

            //add more code here
```

Task 4.6: What is wrong with each of these loop statements?

```
int i = 0; n = 10;

for (i=0;i < n;i++);

{

    cout << i << endl;
```

Task 4.7: Programming exercise 1

Assume that your city classifies a pollution index (an integer value) as follows:
• Less than 35 as “Pleasant”
• 35 through 60 as “Unpleasant”
• Above 60 as “Health Hazard”
Write the code for a program which will ask the user to enter the pollution index (an integer value), store this value in a variable of appropriate type, classify the index using an appropriate control structure and then display this string classification on the screen 5 times.

Implement the program first using **a for loop and then using a while loop with the same functionality**.

Compile and run this program testing it using at least four different carefully selected input values.

Task 4.8: Programming exercise

Write the code for a program which does the following:

- ask the user to enter two decimal numbers (you can use double as the type to represent them) fromthe keyboard and stores these numbers in two variables
- displays a simple menu of three options: 1 for addition, 2 for multiplication, and 3 for division
- asks the user to select an option from the menu (ie. user enters 1, 2 or 3)
- using an appropriate control structure, it performs the operation implied by the user's choice on the two input numbers
- displays the result on the screen
- repeat this process until the user indicates to the program to stop

Compile and run this program testing it an appropriate number of times with carefully selected input values. [Hint: consider using a while loop or a do while loop for this program]

Task 4.9: Programming exercise (Need to submit this task with assignment 1)

Every weekday you go to your classes at university. If it is raining you take your umbrella with you. On the weekends what you do depends on the weather. If it rains, you read in bed otherwise, you go out and have fun.

Write and test a program which will capture the logic of this story and help the user to decide what to do in each of the 7 days of the week, based on the day of the week and the weather. You may consider using the following information:

- you may represent the days of the week using numbers 1 through 7 with Sunday being day number 1
- use a do while loop to ensure that the day number entered by the user in each of the 7 iterations is within the acceptable range of values (ie. 1-7 inclusively)
- the only inputs the program needs to get are: the day of the week (an int) and whether it is raining or not (perhaps a char)
- the possible outputs of the program are: "take an umbrella", "read in bed" and "go out"