

## CSC 150 - PRE LAB #6

**Purpose:** Work with loops

1. Fix the errors in the following while loops. The errors may be logical and/or syntax errors.

a.) //counts 1 to 5

```
i = 1;
while ( i <= 5 )
{
    cout << i;
    i++;
}
```

b.) //counts 1 to 5

```
i = 1;
while ( i <= 5 );
{
    cout << i << " ";
    i++;
}
```

c.) //counts 10 to 0

```
i = 10;
while ( i >= 0 )
{
    cout << i;
i++;    i--;
}
```

d.) //displays product, stops when i & j both past 0

```
i = 10;
j = -10;
while((i > 0) ++ && (j < 0))
{
    cout << i << " * " ;
    cout << j << " = " ;
    cout << i * j << endl;
    i--;
    j--;
}
```

2. What is output by the following loops?

a.)

```
i = 1;
while ( i >= 5 )
{
    cout << i;
    i--;
}
```

b.)

```
i = 1;
sum = 1;
do
{
    cout << i << " + ";
    sum += i;
    i++;
}while ( i <= 5);
cout << " = " << sum;
```

a.) nothing

c.)

```
i = 1;
while ( i <= 5 )
{
    cout << i;
    i++;
}
```

d.)

```
i = 6;
while ( i >= 0 )
{
    cout << i;
    i += -2;
}
cout << i;
```

b.) 1+2+3+4+5+ = 16

c.) 1 2 3 4 5 6

d.) 6 4

3. Write a **do...while** loop, a **while** loop and a **for** loop that will produce the output:  
1 3 9 27 81 243 729

do...while loop:

```
do
{
    z = pow(3, i);
    cout << z;
}
while (z <= 729);
```

while loop:

```
while (i <= 6)
{
    z = pow(3, i);
    i++;
}
```

for loop:

```
for (i = 0; i <= 6; pow(3, i);)
{
    i++;
    cout << i;
}
```

4. What is output by the following code segment?

```
for ( i = 0; i < 5; i++ )
{
    for ( j = 0; j < 5 ; j++ )
        if ( j == i || j == 4-i )
            cout << '*' ;
        else
            cout << '-' ;
    cout << endl;
}
```

Show Answer in the box:

```
* - - - *
- * - * -
- - * - -
- * - * -
* - - - *
```

5. Which loop type(s) is(are) considered pre-test? while for

Which is(are) considered as post-test? do...while

6. Textbook Exercises:

- Section 8.4 (pages 218-219)

1. syntax

2. logical

3. logical

4. logical 5. logical 6. for (i=0 to 10; i <= 10;

i++ to 10)

7. 0

0 1

0 1 2

0 1 2 3

0 1 2 3 4

## 7. Textbook Learn by Doing Exercise

- Section 8.4, #1 (page 219)

```
#include <iostream>
#include <cmath>
using namespace std;

int main()
{
    int assignments;
    double score;
    double sum = 0;
    double average;
    double help = 0;

    cout << "How many assignments ";
    cin >> assignments;

    for ( score = 0; score < assignments; score++)
    {
        cout << "Score ";
        cin >> sum;
        help = sum + help;
        /*cout << "Score ";
        cin >> sum;
        score = sum + score;*/

        average = help / assignments;
    }
    cout << average << endl;
    return (0);
}
```

## 8. Write a program that presents the user a menu for determining traffic violation ticket costs.

The main menu choices are:

- Parking Violation
- Jaywalking
- Speeding
- Quit program

The fine for parking violation is \$15, for jaywalking is \$10, and for speeding is a varying amount depending on how much over the speed limit one was going.

- Up to 5mph over - \$15
- More than 5, up to 15mph - \$40
- Over 15mph - \$100

The program must continue presenting the menu until the user selects the Quit option. Any menu choice other than the valid ones will cause an error message to display and the menu to redisplay.

When the user selects one of the violations, display their fine. In the case of speeding, the program must ask for the number of miles per hour over the limit and determine the corresponding fine.

```
#include <iostream>
#include <cmath>
using namespace std;

int main()
{
    int choice;
    int choice_two;

    cout << "This Program displays traffic violation ticket costs" << endl;
    cout << "1. Parking Violation" << endl;
    cout << "2. Jaywalking" << endl;
    cout << "3. Speeding" << endl;
    cout << "4. Quit" << endl;

    cout << "> ";
    cin >> choice;

    switch (choice)
    {
        case 1:
            cout << "You owe $15" << endl;
            break;
        case 2:
            cout << "You owe $10" << endl;
            break;
        case 3:
            cout << "Speeding varies" << endl;
            cout << "1. Up to 5 mph over" << endl;
            cout << "2. 5mph-15 mph over" << endl;
            cout << "3. Over 15 mph" << endl;
            cout << "> ";
            cin >> choice_two;

            switch (choice_two)
            {
                case 1:
                    cout << "You owe $15" << endl;
                    break;
                case 2:
                    cout << "You owe $40" << endl;
                    break;
                case 3:
                    cout << "You owe $100" << endl;
                    break;
                default:
                    cout << "Please choose only 1-3";
                    break;
            }
        case 4:
            break;
        default:
            cout << "Please only choose 1-4" << endl;
            break;
    }
    return (0);
}
```