

Lab 6 - CMPS 1044 - Computer Science 1

Switch Statements

Objective: Demonstrate use of the switch statement in C++

Switch Statement: A selection control mechanism that can sometimes be used in place of if/else if statements. Allows the program to branch.

Syntax:

```
switch (IntegerExpression) {
    case ConstantExpression1:
        // Statements to be executed
        // if IntegerExpression == ConstantExpression1
        break; //Causes the program to exit the switch statement
    case ConstantExpression2:
        // Statements to be executed
        // if IntegerExpression == ConstantExpression2
        break;
    default:
        // Statements to be executed
        // if IntegerExpression doesn't match any case
}
```

IMPORTANT

- IntegerExpression must be a single variable of any integer data type (e.g. int or char).
 - ConstantExpression must be integer literal or integer constant (such as 'A' or 5). It cannot be an integer variable or Boolean expression. Do not put quotes on numbers.
- 1.
 2. Open a new project and type in the code below. Test it with all cases.

```
#include <iostream>
using namespace std;
int main()
{
    char letter;
    cout << "Enter a W, D, or T to indicate transaction \n";
    cin >> letter;
    switch (letter) {
    case 'W':
        cout << "Withdrawal\n";
        break;
    case 'D':
        cout << "Deposit\n";
        break;
    case 'T':
        cout << "Transfer\n";
        break;
    default:
        cout << "Not a valid choice.\n";
    }
    system("pause");
}
```

```
    return 0;
}
```

3. Now, modify your code by commenting out the `break` statement in the 'W' case as shown below.

```
char letter;
cout << "Enter a W, D, or T to indicate transaction \n";
cin >> letter;
switch (letter) {
    case 'W':
        cout << "Withdrawal\n ";
        //break;
    case 'D':
        cout << "Deposit\n ";
        break;
    case 'T':
        cout << "Transfer\n ";
        break;
    default:
        cout << "Not a valid choice. \n ";
}
}
```

4. Re-build and run again. Now what is the output you enter 'W'? This demonstrates the "fall-through" feature of switch statements. When a matching case is found, all statements following the case **: line will be executed until a break statement (or the closing }) is encountered...even if one or more case **: lines are encountered.

5. Sometimes, this is what the programmer wants. Modify your code to look like this:

```
char letter;
cout << "Enter a W, D, or T to indicate transaction \n";
cin >> letter;
switch (letter) {
    case 'W':
    case 'w':
        cout << "Withdrawal";
        break;
    case 'D':
    case 'd':
        cout << "Deposit";
        break;
    case 'T':
    case 't':
        cout << "Transfer";
        break;
    default:
```

```
        cout << "Not a valid choice.\n";
    }
```

Re-build, run, and test with both uppercase and lowercase responses.

5. Now, modify your program so that it will accomplish the same thing as before, but implements the if/else if statement.

6. What is wrong with the following switch statement?

```
int temp;
cout << "Enter the temperature. ";
cin >> temp;
switch (temp) {
    case (temp < 0):
        cout << "Temperature is negative.\n";
        break;
    case 0:
        cout << "Temperature is zero.\n";
        break;
    case (temp > 0):
        cout << "Temperature is positive.\n";
        break;
}
```

7. Assignment: Rewrite the following program segment using a switch statement instead of the if/else if statement. Once you have translated to switch statements, use the while loop code provided to print the results of each outcome to a file. Remember to include three comments and a header, as well as statements to print your header to the output file.

```
#include <iostream>
#include <fstream>
using namespace std;
int main()
{
    int selection;

    cout << "Which formula do you want to see?\n\n";
    cout << "1. Area of a circle\n";
    cout << "2. Area of a rectangle\n";
    cout << "3. Volume of a cylinder\n";
    cout << "4. None of them!\n";
    cin >> selection;
    if (selection == 1)
        cout << "Pi times radius squared\n";
    else if (selection == 2)
        cout << "Length times width\n";
    else if (selection == 3)
        cout << "Pi times radius squared times height\n";
    else if (selection == 4)
```

```
        cout << "Well okay then...Goodbye!\n";
else
    cout << "Not good with numbers, eh?\n";
system("pause");
return 0;
}
```

```
int count = 1;
while (count <= 5)
{
    // Insert cout, cin & switch statements here - output to file
    count += 1;
}
```