Lab 3 Conditionals

Hello and welcome to the Conditional Lab. As conditional is a segment of code that will only execute under the condition that a required state is meet. An example of a conditional is **"If it is not raining then I will go to the park."** The reason that this is a conditional is that it sets up the condition under which you will go to the pare **"if it is not raining."** The first conditional you will be introduced to is the **If** statement, after which you will then be introduced to the **If-Else** statement, then the **If-Else if** statement, then finally the **Switch Case** statement. Now please open Visual C++ 6.0 and create your workspace and file and type in the basic application skeleton.

The **If** statement is exactly the same as the example that was given in the Lab opener **"If it is not raining then I will go to the park."** For the basic if statement we will use our example from the Lab opener. At the beginning of the application we will want to ask the user if it is raining and then provide them with the options to choose from. After we do that we will then need to prompt the user for their input, read in that input and test to see what they entered. Lets start by coding the messages to prompt the user for their input and then code the line to take in that input from the user. The first thing you want to do is ask the user **"Is it raining?"** Next you will want to provide the user with the two options that they can choose from, in this case it is either a yes or a no, how ever rather than reading in yes and no we will be providing the user with a number oriented to the choice that they will make. Next you need to provide the prompt to take in that number. So in other words if it is raining the user will provide the input of 1. For this example I choose the simple prompt "Please enter the number of your choice: ". At this point in the coding process your code should look similar to the below example.

```cpp
#include <iostream>

using namespace std;

void main ()
{
    cout<<"Is it raining"<<endl;
```

```
        cout<<"1. Yes"<<endl;
        cout<<"2. No:"<<endl;
        cout<<"Please enter the
number of your choice: ";
}
```

Once your code looks similar to the provided code compile you code to ensure there are no
compilation errors. After you successfully compile your code we will move on. Now we need to
read in the user's input and test that input. This means that you will first have to create a variable of
type int to hold the users input. Once you have declared your variable you can now type up the basic
frame for that all if statements conform to as shown bellow.
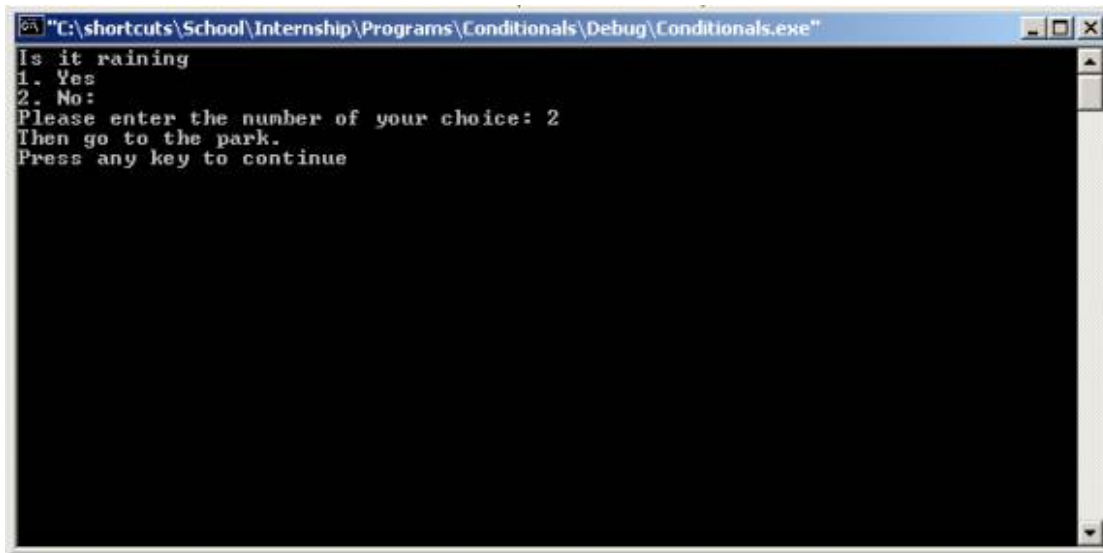
```
if
(condition)
{
}
```

In the basic if form provided above were it says condition is were you would type in the condition
under which the code within the brackets would execute. For this example I choose to have it were
the condition was that the integer holding the user input was equal to 2 meaning that it is not raining.
Once you type up the basic if statement form you can then type in what the application should do
under those conditions. For this example I choose to have the application print out to the screen
"Then go to the park." Once you have typed in all required code discussed about above your code
should look similar to the code provided below.

```
#include <iostream>

using namespace std;
int answer = 0;
void main ()
{
    cout<<"Is it raining"
<<endl;
    cout<<"1. Yes"<<endl;
    cout<<"2. No:"<<endl;
    cout<<"Please enter the
number of your choice: ";
    cin>>answer;
    if (answer == 2)
    {
        cout<<"Then go to
the park."<<endl;
```

```
        }
}
```

After your code looks similar to the provided code, compile it, and then if there are any compilation

errors correct all of them and re-compile the application. Once you successfully compile your

application you can then run it. When you run you application to completion you should see a

window that looks similar to the one below.

If you chose the option that told you application that it was raining you would of noticed that your

application did nothing after you entered this option. This is because you did not tell the application

to do any thing when the user provided that type of input. In order to deal with that type of input you

would need to add an **Else** to your **If** statement, there by turn your **If** statement into a **If – Else**

statement. When you use an **If – Else** statement in your applications it tells the application that if

what you are testing does not meet any of the conditions you are testing, then under that circumstance

you need to do the following. Now lets turn our **If** statement into an **If – Else** statement. In order to

do so you will need to add to the basic form of the **If** statement the code provided below.
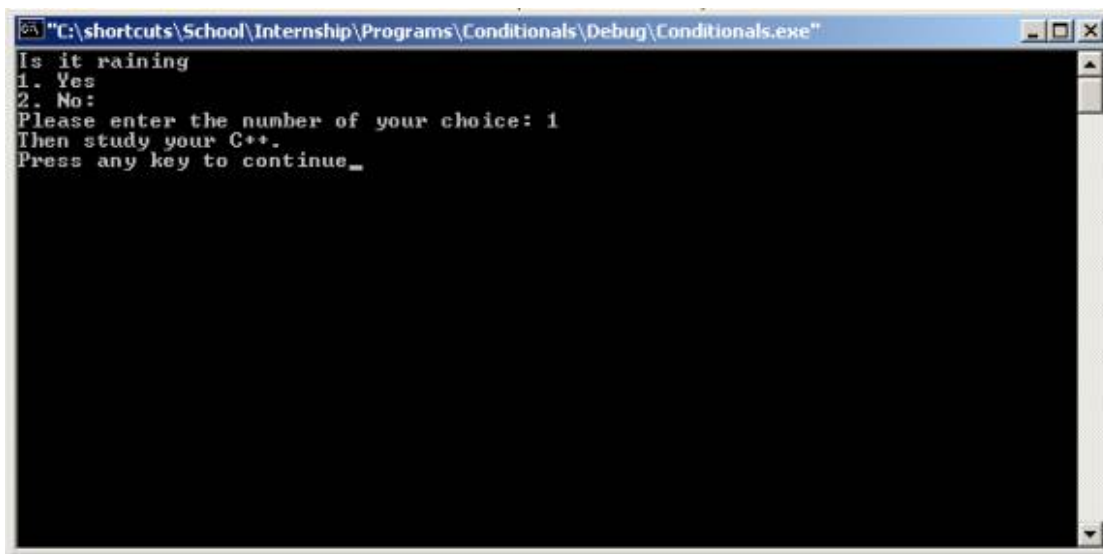
```
else
{}
```

Once you add this code to your application you can now enter within the bracket of the **Else** portion

what you want your application to do when the user does not provide a 2 as input. For this example I

choose to have the application print to the screen **"Then study your C++."** Once you have entered

this new section of code your code should look similar to the code provided below.

```cpp
#include <iostream>

using namespace std;

void main ()
{
    int answer = 0;
    cout<<"Is it raining"
<<endl;
    cout<<"1. Yes"<<endl;
    cout<<"2. No:"<<endl;
    cout<<"Please enter the
number of your choice: ";
    cin>>answer;
    if (answer == 2)
    {
        cout<<"Then go to
the park."<<endl;
    }
    else
    {
        cout<<"Then study
your C++."<<endl;
    }
}
```

Once your code looks similar to the code provided compile and correct any compilation errors and then run it. When you run your application you should see a window similar to the one found below.

```
"C:\shortcuts\School\Internship\Programs\Conditionals\Debug\Conditionals.exe"
Is it raining
1. Yes
2. No:
Please enter the number of your choice: 1
Then study your C++.
Press any key to continue_
```

Now you might be asking your self well this is all well and good but what if I need to provide the user with more than two choices. In that case you would use our third conditional statement the **If – Else if** statement. With this type of conditional statement your form would change to the form provided bellow.

```
if
(condition)
{
}
else if
(condition)
{
}
else
{
}
```
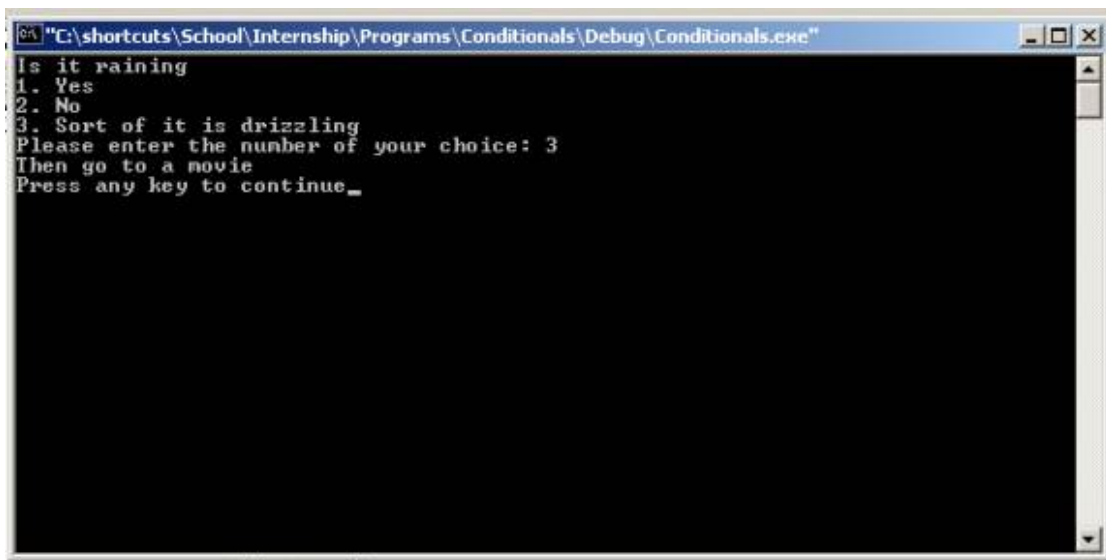
As you can see the difference between and **If – Else** and an **If – Else if** statement is that between the **If** and the **Else** portion of the code there is an **Else if** statement that allows you to test another condition. With this type of condition statement you add on as many **Else if**s as you need to test all of the conditions that are possible. Now that you know what an **If – Else if** statement is lets modify our code to allow for this new statement. For this example we will add the option **"3. Sort of it is drizzling"** to our options, and add to our conditional the ability to test for this response. Also for this example I chose to have the applications response to this option **"Then go to a movie."** Once you add the ability to test for this response, and add the option to the options your code should look similar to the code provided below.

```cpp
#include <iostream>

using namespace std;

void main ()
{
    int answer = 0;
    cout<<"Is it raining"
<<endl;
    cout<<"1. Yes"<<endl;
    cout<<"2. No"<<endl;
    cout<<"3. Sort of it
is drizzling"<<endl;
    cout<<"Please enter
the number of your choice:
";
    cin>>answer;
    if (answer == 2)
    {
        cout<<"Then go to
the park."<<endl;
    }
    else if (answer == 3)
    {
        cout<<"Then go to
a movie"<<endl;
    }
    else
    {
        cout<<"Then study
your C++."<<endl;
    }
}
```

Once your code looks similar to the code provided the compile and correct any compilation errors and run you application. When you run your application and choose option 3 you should see a window that looks similar to the bellow window.

```
"C:\shortcuts\School\Internship\Programs\Conditionals\Debug\Conditionals.exe"

Is it raining
1. Yes
2. No
3. Sort of it is drizzling
Please enter the number of your choice: 3
Then go to a movie
Press any key to continue_
```

Now that you know about the first three conditionals it is now time to move on to the final

conditional. The final conditional is called the **Switch case** statement. With this type of conditional

statement you do not need to write many **If – Else if – Else if - … - Else** statements to test user input

related to the options you provide the user. In order to use a **Switch case** statement you first type in

the basic form of a **Switch case** statement which is:

```
switch
(variable
testing)
{
        case :

break;
        case :

break;

default:
}
```

Keep in mind that every time you write a **Switch case** statement that you must put a `break` between

each case. This is because the `break`s tell the application that a condition has been meet and not to

continue going through the **Switch case** statement (which it would do if you did not put in the

`break`s). In addition, you can also use `continue`s in place of any break were you do not want the

application to break out of the statement and rather wish it to continue going through the statement.

Really only time this is necessary is on those rare chances that more than one condition match is

possible in the switch case. At the end of the statement you will notice that there is a `default` section

this tells your application that if the variable did not meet any of the above conditions in that case to do the following. Now that you know about the **Switch case** statement lets modify our code and rather than using the **If – Else if** statement use the **Switch case** statement. Keep in mind that even though we are changing the statement that we are using in the application the conditions under which the phrases will be printed to the screen will not change. Once you convert your code over to a **Switch case** statement your code should look similar to the code provided below.

```cpp
#include <iostream>

using namespace std;

void main ()
{
    int answer = 0;
    cout<<"Is it raining"
<<endl;
    cout<<"1. Yes"<<endl;
    cout<<"2. No"<<endl;
    cout<<"3. Sort of it
is drizzling"<<endl;
    cout<<"Please enter
the number of your choice:
";
    cin>>answer;
    switch (answer)
    {
        case 1:
            cout<<"Then
study your C++."<<endl;
            break;
        case 2:
            cout<<"Then
go to the park."<<endl;
            break;
        default:
            cout<<"Then
go to a movie"<<endl;
    }
}
```

Once your code looks similar to the code provided then compile your application. Once you successfully compile your application you should run it. If every thing is working correctly you should see windows similar to the ones below for each of the possible conditions (keep in mind we are not testing to see if they did in fact type in a number).

```
"C:\shortcuts\School\Internship\Programs\Conditionals\Debug\Conditionals.exe"

Is it raining
1. Yes
2. No
3. Sort of it is drizzling
Please enter the number of your choice: 1
Then study your C++.
Press any key to continue
```

```
"C:\shortcuts\School\Internship\Programs\Conditionals\Debug\Conditionals.exe"

Is it raining
1. Yes
2. No
3. Sort of it is drizzling
Please enter the number of your choice: 2
Then go to the park.
Press any key to continue
```

```
"C:\shortcuts\School\Internship\Programs\Conditionals\Debug\Conditionals.exe"

Is it raining
1. Yes
2. No
3. Sort of it is drizzling
Please enter the number of your choice: 3
Then go to a movie
Press any key to continue_
```

Congratulations you have now completed the Lab 3 Conditionals.