Electrical Engineering Department - ITU

CS101L: Computing Fundamentals & Programming Lab

Course Instructor: Dr. Shahzad Ahmad	**Dated: 21/09/2022**
Lab Engineer: Muhammad Usama Riaz	**Semester: Fall 2022**
Session: 2022-2025	**Batch: BSEE2022**

Lab 5. Use of Conditional Statements for Branching Flows

Name	Roll number	Report (out of 100)	Scaled to 10	Total (out of 10)
Sulman Akhtar	BSEE22041			

Checked on: _____

Signature: _____

Objective

The goal of this handout is to make students familiar with the basic elements of C++ and conditional statements i.e., if-else.

Equipment and Component

Component Description	Value	Quantity
Computer	Available in lab	1

Conduct of Lab

1. Students are required to perform this experiment individually.
2. In case the lab experiment is not understood, the students are advised to seek help from the course instructor, lab engineers, assigned teaching assistants (TA) and lab attendants.

Theory and Background

An if-else statement controls conditional branching. Statements in the if-branch are executed only if the condition evaluates to a non-zero value (or true). If the value of condition is nonzero, the following statement gets executed, and the statement following the optional else gets skipped.

Lab Tasks

Task 1

Write a program to input a number. If the number is divisible by 2 then print the message on the screen that “the number is even.” otherwise print “the number is odd.”

```
//Paste your CODE here:
#include <iostream>
using namespace std;

int main()
{
   int num;
   cin>>num;
   if(num % 2==0)
   cout<<num<<" number is even";
   else
   cout<<num<<" number  is odd";

                  return 0;



//Paste your OUTPUT here:
```

```
23
23 number  is odd
```

Task 2

i. Create two integer variables, input them from user and print which variable is greater and which variable is lesser.
e.g., first variable is 40 and second is 42, then you output should be second is largest.

ii. Create two strings, input strings from user and print which string is greater and which variable is lesser**.**
e.g., first string is "abbas" and second is "abid", then you output should be second is largest.

iii. Create three variables, first will be double type, second will float, third will be int type. Input them from the user and print which one is greatest.
e.g., first 60.65(double), second 60.95(float), third 60(int), you should print the second is greatest and is float.

```
//Paste your CODE here:
i.
#include <iostream>
using namespace std;

int main(){
        int number1,number2;
        cout<<"number1"<<endl;
                cin>>number1;
        cout<<"number2"<<endl;
          cin>>number2;
        cout<<"the greater number is: ";
        if(number1>number2)
        cout<<"number1";
        else
        cout<<"number2";
                return 0;

}
ii.
#include <iostream>
using namespace std;
```

```
int main(){
	int abbas,abid;
	cout<<"abbas"<<endl;
		cin>>abbas;
	cout<<"abid"<<endl;
	  cin>>abid;
	cout<<"the greater name is ";
	if(abid>abbas)
	cout<<"abid";
	else
	cout<<"abbas";

		return 0;

}
```

iii.

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

int main(){
	double a;
	cout<<"the first number of double is: "<<endl;
	cin>>a;
	float b;
	cout<<"the second number of float is "<<endl;
	cin>>b;
	int c;
	cout<<"the third number of int is: "<<endl;
	cin>>c;
	cout<<"the greater number is: ";
	if(b>a,c)
	cout<<"second number and float";
	else
	cout<<"first number,third number";

		return 0;

}
```

//Paste your OUTPUT here:

i.

```
    number1
    40
    number2
   42
   the greater number is: number2
```

ii.

```
abbas
21
abid
31
the greater name is abid
iii.
the first number of double is:
60.65
the second number of float is
60.95
the third number of int is:
60
the greater number is: second number and float
```

Task 3

You need to make a grading system, your friend Huzaifa has got some marks in math, he doesn't know what grade he has. Kindly help him by telling grade.

Below 40 -F, 40 to 49 – E, 50 to 55 - D
56 to 60 – C- 60 to 80 – B+ Above 80 -A+

Ask user to enter marks and print the corresponding grade.

```
//Paste your CODE here:
#include <iostream>
using namespace std;

int main()
{
        double marks;
        cout<<"Enter marks obtaine in math: ";
          cin>>marks;
        cout<<"\nGrade = ";
        if(marks>=80)
          cout<<"A+";
        else if(marks>=60 && marks<80)
          cout<<"B+";
        else if(marks>=56 && marks<60)
    cout<<"C-";
  else if(marks>=50 && marks<56)
    cout<<"D";
  else if(marks>=40 && marks<49)
    cout<<"E";
  else if(marks>40)
    cout<<"F";
  else
     cout<<"invalid";
     cout<<endl;
```

```
                return 0;

}
```

//Paste your OUTPUT here:

Markes obtained in math: 50

  Grade D

Assessment Rubric for Lab

Method for assessment:

Lab reports and instructor observation during lab sessions. Outcome assessed:

a. Ability to conduct experiments, as well as to analyze and interpret data (P) b. Ability to function on multi-disciplinary teams (A)

c. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (P)

Performance metric	Task	CLO	Description	Max marks	Exceeds expectation	Meets expectation	Does not meet expectation	Obtained marks
1. Realization of experiment (a)	1	1	Functionality	40	Executes without errors excellent user prompts, good use of symbols, spacing in output. Through testing has been completed (35-40)	Executes without errors, user prompts are understandable, minimum use of symbols or spacing in output. Some testing has been completed (20-34)	Does not execute due to syntax errors, runtime errors, user prompts are misleading or non-existent. No testing has been completed (0-19)	
2. Teamwork (b)	1	3	Group Performance	5	Actively engages and cooperates with other group member(s) in effective manner (4-5)	Cooperates with other group member(s) in a reasonable manner but conduct can be improved (2-3)	Distracts or discourages other group members from conducting the experiment (0-1)	
3. Conducting experiment (a, c)	1	1	On Spot Changes	10	Able to make changes (8-10)	Partially able to make changes (5-7)	Unable to make changes (0-4)	
	1	1	Viva	10	Answered all questions (8-10)	Few incorrect answers (5-7)	Unable to answer all questions (0-4)	
4. Laboratory safety and disciplinary rules (a)	1	3	Code commenting	5	Comments are added and does help the reader to understand the code (4-5)	Comments are added and does not help the reader to understand the code (2-3)	Comments are not added (0-1)	
5. Data collection (c)	1	3	Code Structure	5	Excellent use of white space, creatively organized work, excellent use of variables and constants, correct identifiers for constants, No line-wrap (4-5)	Includes name, and assignment, white space makes the program fairly easy to read. Title, organized work, good use of variables (2-3)	Poor use of white space (indentation, blank lines) making code hard to read, disorganized and messy (0-1)	
6. Data analysis (a, c)	1	4	Algorithm	20	Solution is efficient, easy to understand, and maintain (15-20)	A logical solution that is easy to follow but it is not the most efficient (6-14)	A difficult and inefficient solution (0-5)	
7. Computer use (c)	1	2	Documentation & GitHub Submissions	5	Timely (4-5)	Late (2-3)	Not done (0-1)	
	Max Marks (total):			100			Obtained Marks (total):	

Lab Engineer Signature: _____