CS- 161 CP LAB – Control Structures DECISION MAKING

Department of Computer Science & Engineering AUMC

Max Time: 2:00 hrs **Instructor: Ahmad Mohsin**

Relational Operators and Conditions Logical Operators

Decision Making → if, if/else, nested if, nested if / else, if/ else if, switch statements

Pre- lab Readings for next lab on (today) Control structures statements from book tony Gaddis

Tip: Draw Flow charts before on papers before attempting in IDE

iF Statement

Practice Example 1

Enter a number from key board. If number is odd print it is odd.

If / else

Practice Example 2

Enter a number from key board. If number is odd print it is odd. Else print it is even

Practice Example 3

Input two numbers from keyboard. If these two numbers are the same, print on the screen you entered same variables else print you entered two different numbers.

Practice Question

A shopkeeper announces a package for customers that he will give 10 % discount on all bills and if a bill amount is greater than 5000 then a discount of 15 %. Write a C program which takes amount of the bill from user and calculates the payable amount by applying the above discount criteria and display it on the screen.

Practice Question:

Write a program which takes input of 03 integers and prints the largest of these 03 numbers

Nested IF

See this code:

```
include <iostream>
using namespace std;

int main ()
{
   // local variable declaration:
   int a = 100;
   int b = 200;

   // check the boolean condition
   if( a == 100 )
   {
       // if condition is true then check the following
       if( b == 200 )
       {
          // if condition is true then print the following
          cout << "Value of a is 100 and b is 200" << endl;
       }
   }
   cout << "Exact value of a is : " << a << endl;
   cout << "Exact value of b is : " << b << endl;

   return 0;
}
```

Nested if / else (Do reading from book first) - follow slides

See this code and practice it: draw its flow chart first

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

int main() {
   int number;
   cout<< "Enter an integer: ";
   cin>> number;

   if ( number > 0) {
      cout << "You entered a positive integer: "<<number<<endl;
   }
   else if (number < 0){
      cout<<"You entered a negative integer: "<<number<<endl;
   }
   else {
      cout<<"You entered 0."<<endl;
   }

   cout<<"This statement is always executed because it's outside nested if..else statement.";
   return 0;

}
```

Practice Question

Write a program using nested if / else to find the grades of a student as following:

Marks > = 90 → Grade A

Marks > = 80 → Grade B

Marks > = 70 → Grade C

Marks > = 60 → Grade D

Nested if else / if (Do reading from book first) - follow slides)

Practice Question:

Write a C++ program which makes use of if / else if statement to make a menu of a Health Club Membership. Output of the program will be like this:

Health Club Membership Menu

1. Standard Adult Membership
2. Child Membership
3. Senior Citizen Membership
4. Quit the Program

Enter your choice: 3 [Enter]
For how many months? 6 [Enter]

The total charges are $180.00

Using if else structure to check the bad input from the user.

Write a C++ program which tells you the Letter Grade of your Course when you have entered the Numeric Score via keyboard as following:

Marks > = 90 → Grade A

Marks > = 80 → Grade B

Marks > = 70 → Grade C

Marks > = 60 → Grade D

Now you have to make check on the Numeric score that it should not be less than 0 and it should not exceed 100 marks when user makes input of it. Make use of logical operator.

Time Calculator:

Write a program that asks the user to enter a number of seconds.There are 60 seconds in a minute. If the number of seconds entered by the user is greater than or equal to 60, the program should display the number of minutes in that many seconds.

There are 3,600 seconds in an hour. If the number of seconds entered by the user is greater than or equal to 3,600, the program should display the number of hours in that many seconds.

There are 86,400 seconds in a day. If the number of seconds entered by the user is greater than or equal to 86,400, the program should display the number of days in that many seconds.

Practice Question:

Write a Program to check number is positive and how many digits number have (up to 1000)

FLOW CHARTS – FOR CONTROL STRUCRES (For flow charts please see flow chart index at course folder)

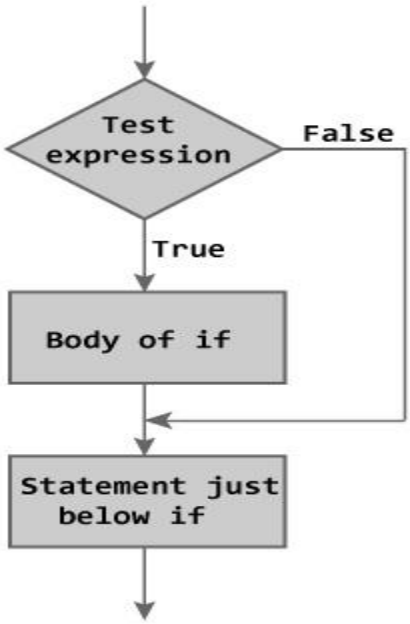


Figure: Flowchart of if Statement

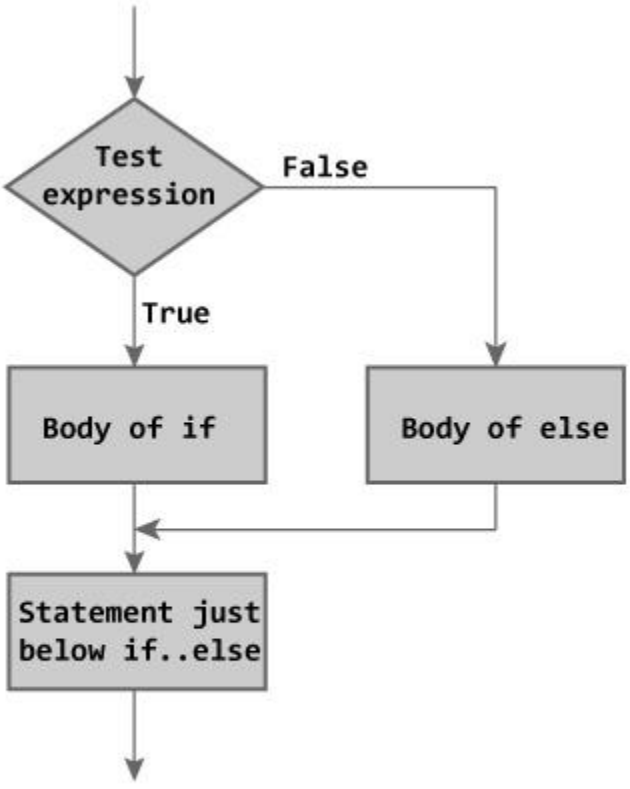
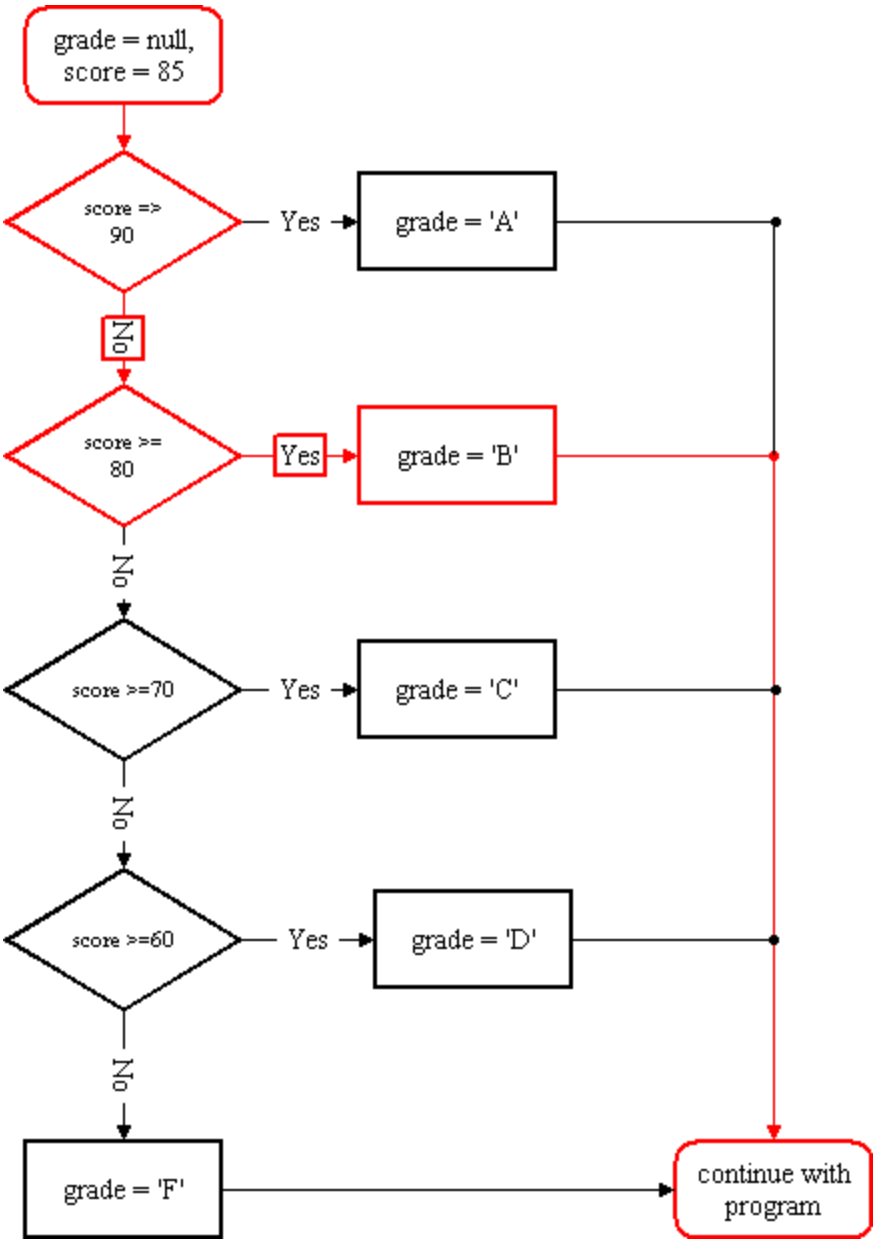


Figure: Flowchart of if...else Statement



If else if flow chart