School Of Mechanical & Manufacturing Engineering, NUST

Department of Mechanical Engineering

CS-114 - Fundamental of Programming

Lab Manual # 03

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DATE:

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Objective:

This lab is about the selection structure and understanding the types of selection structures.

Description:

Selection: decisions, branching, when there are 2 or more alternatives. There are three types of selection structures:

- if
- if...else
- switch

Nested if else:

In C++ we can use an if statement in another else block or we can also include an if block in another if block.

Syntax : C++ Nested If

```
if( boolean_expression 1)
{
      // Executes when the boolean expression 1 is true
      if(boolean_expression 2)
      {
            // Executes when the boolean expression 2 is true
      }
}
```

Example: Nested If

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

int main()
{
    int age = 87;

    if(age>60){

        if(age>100){
            cout << "why are you stil alive?"
        }

    }else{
        cout << "you are young, get a job" << endl;
    }

    return 0;
```

We can nest else if…else in a similar way as you have nested the if statement.

Example: Nested If-else

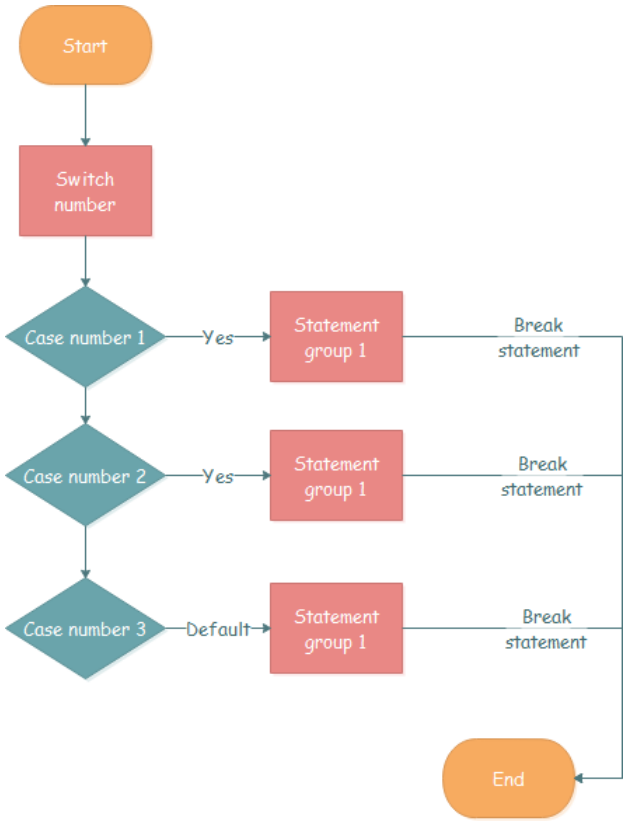
```
#include <iostream>
using namespace std;


int main ()
{
      int marks = 55;
      if( marks >= 80) {
            cout << "U are 1st class !!";
      }
      else {
            if( marks >= 60) {
                  cout << "U are 2nd class !!";
            }
            else {
```

```
                if( marks >= 40) {
                    cout << "U are 3rd class !!";
                }
                else {
                    cout << "U are fail !!";
                }
            }
        }
        return 0;
}
```

Switch Statement:

Switch case statements are a substitute for long if statements. A switch statement allows a variable to be tested for equality against a list of values. Each value is called a case, and the variable being switched on is checked for each switch case.

```
switch (n)
{
    case 1: // code to be executed if n = 1;
        break;
    case 2: // code to be executed if n = 2;
        break;
    default: // code to be executed if n doesn't match any cases
}
```


Start
Switch number
Case number 1
Yes
Statement group 1
Break statement
Case number 2
Yes
Statement group 1
Break statement
Case number 3
Default
Statement group 1
Break statement
End

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Lab Task:

1. Write a C++ code for a basic calculator application, using switch...case, to carry out operations such as addition, subtraction, multiplication, or division.
2. Write a C++ program that prints the total number of days in a month, using a switch case.
3. Write a C++ program to take two integer values from the user. Check whether the values are equal. If they are not equal, determine and display the greater value using nested if-else statements.
4. Write a C++ program to read the value of an integer m and display the value of n is 1 when m is larger than 0, 0 when m is 0, and -1 when m is less than 0 using nested if-else.

Home Task:

1. Write a C++ program to print the total number of populations in Punjab, Sindh, KPK, and Balochistan using a switch case.
2. Write a C++ program to check whether an alphabet is a vowel or consonant using a switch case.
3. Write a C++ program to check whether a number is positive, negative, or zero using a switch case.
4. Write a C++ to find out whether a person is an adult, teenager, or child using nested if-else.
5. Write a C++ program that takes three number from the user and find the greatest number out of the three numbers using nested if-else statements.

6. Write a C++ program to check whether the alphabet entered by the user is Vowel or Consonant using nested if-else.