DECISION MAKING IN PROGRAMMING USING IF ELSE STRUCTURE

Normally, your program flows along line by line in the order in which it appears in your Source code. But, it is sometimes required to execute a particular portion of code only if Certain condition is true; or false i.e. you have to make decision in your program. There are three major decision making structures. Four decision making structures:

1. If statement
2. If-else statement
3. Switch case

1 The if statement

The if statement enables you to test for a condition (such as whether two variables are equal) and branch to different parts of your code, depending on the result. The simplest form of an if statement is:

if (expression)
Statement

The expression may consist of logical or relational operators like (> >= < <= && ||)

Example-1

```
void main(void)
    {
      int var;
      cout<< Enter any number <<endl;
      cin>>var;

      if(var==10)
      cout<<" The user entered number is Ten"<<endl;

    }
```

2 The if-else statement

Often your program will want to take one branch if your condition is true, another if it is false. The keyword else can be used to perform this functionality:

if (expression)
statement;
else
statement;

Note: To execute multiple statements when a condition is true or false, parentheses are used.

Example-2

Consider the following example that checks whether the input character is an upper case or lower case:

```
void main(void)
        {
          char ch;
          cout<<" Enter any character"<<endl;
          cin>>ch;
          if(ch>="A" && ch<="Z")
          cout<<" an upper case character "<<endl;
          else
          cout<< "a lower case character "<<endl;
  getch();
          }
```

3 Nested 'if else' statement

Nesting "if else" statement means that one if else construct is a part of other. When an "if" statement is the target of another "if" or "else", it is said to be nested within the outer "if".

Which 'if' is associated with the 'else'?

When you see a nested "if else" structure, question may arise that which "if" is getting "else" statement. The answer is very simple an "else" always associates with the nearest "if" within the same block.

4 Nested structure

It is possible to string together several "if" and "else". Such construct is called "if – else-if ladder" or "if – else stair case". In this condition a nested "if" has as its target another " if ". The general form of nested "if else" structure is as follows:

```
if ( expression )
        statement;
else
                if ( expression )
                    statement;
  else
                        if ( expression )
                        statement;
                ……….
               else
                        statement;
```

The conditions are evaluated from top downward fashion. As soon as a true condition is found, the statement associated with it is executed and the rest of the ladder is bypassed. If none of the condition is true, the final "else" will be executed. If the final "else" is not present, no action will be performed.

5 What will be output of following program?

```
#include<stdio.h>
void main()
{
  int a=100;
  if(a>90)
  cout<<"Shahid Afridi"<<endl;
  else if(a>110)
  cout<<"Shoaib Akhtar"<<endl;
  else if(a>120)
  cout<<"Kamran Akmal"<<endl;
}
```