Lecture 4.1

Topics

1. Extended Conditional Structures – **`if-else if-else`**

---

1. Extended Conditional Structure – `if-else-if-else`

In many scenarios, there may be more than two choices to be considered; for examples, determining one of the seven (7) days in a week, twelve (12) months in a year, etc.

In these cases, the **extended form** of **`if-else`** structure can be used.

The flowchart is given as follows,

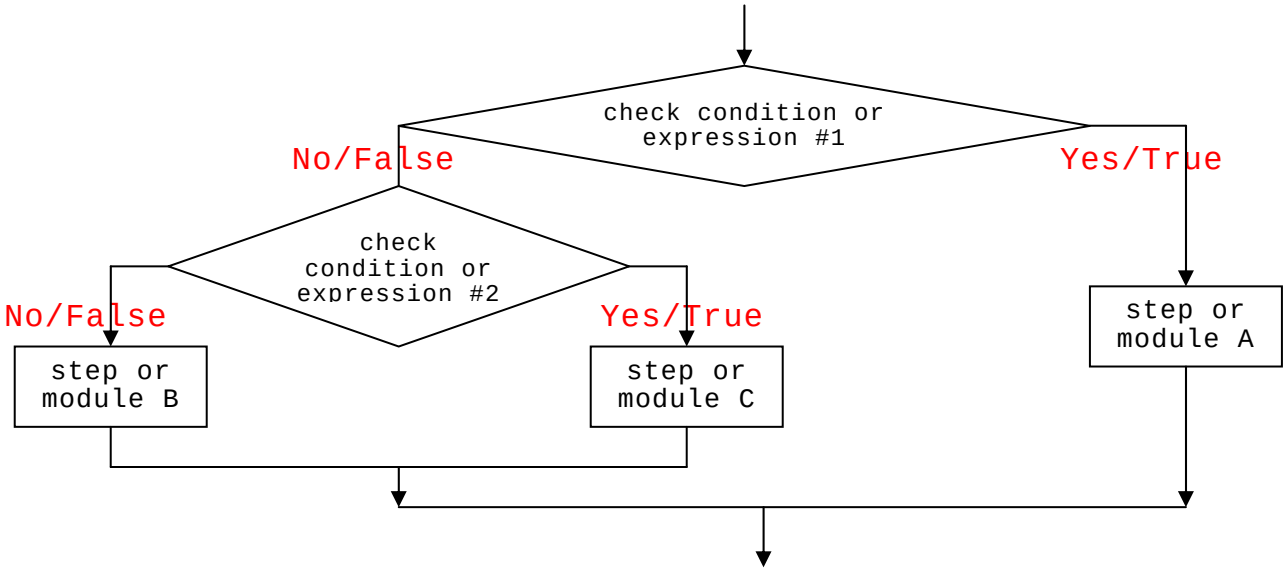

Figure 1 Extended `if-else-if` conditional structure

The general syntax of the extended **`if-else-if`** structure is given as follows,

```
if ( testExpression1 ) {

  //if testExpression1 is true, perform option #1 here.

} else if ( testExpression2 ) {

  //if testExpression2 is true, perform option #2 here;
  //  this also means that testExpression1 is false.

} else {

  //if testExpression2 is false, perform last option;
  //  this also means that
  //    testExpression1 and testExpression2 are both false.

}
```

The above extended structure **can also be extended further and further** as needed. The code structure below illustrates the idea.

```
if ( testExpression1 ) {

  //if testExpression1 is true, perform option #1 here.

} else if ( testExpression2 ) {

  //if testExpression2 is true, perform option #2 here;
  //  this also means that testExpression1 is false.

} else if ( testExpression3 ) {

  //if testExpression3 is true, perform option #3 here;
  //  this also means that
  //    testExpression1 and testExpression2 are both false.

} else {

  //if testExpression3 is false, perform last option;
  //  this also means that ALL test expressions are false.

}
```

The following example with function `printDay()` shows how the `if-else-if` extension can be written.

```
void printDay( int iDay ) {
  if ( iDay == 1 )   {
    cout << "\nIt is Sunday!";
  } else if ( iDay == 2 ) {
    cout << "\nIt is Monday!";
  } else if ( iDay == 3 ) {
    cout << "\nIt is Tuesday!";
  } else if ( iDay == 4 ) {
    cout << "\nIt is Wednesday!";
  } else if ( iDay == 5 ) {
    cout << "\nIt is Thursday!";
  } else if ( iDay == 6 ) {
    cout << "\nIt is Friday!";
  } else if ( iDay == 7 ) {
    cout << "\nIt is Saturday!";
  } else {
    cout << "\nIt is an INVALID selection!";
  }

  return;
}
```

Note that the test expression of **`iDay`** can be of **any value** of type **`int`**. This would mean that there are many values falling to the last option group (i.e., the last **`else`** block).

In particular, if the **same expression** (such as **`iDay`**) is used to test against different integral values (e.g., expressions of **`if`**s as in the above) then one may want to consider the use of a **`switch`** structure.

We will discuss **`switch`** structure next.