Lecture 8.1

Topics
   1. Extended **if-else if-else**

_____
1. Extended Conditional Structure – **if-else if-else**

In many scenarios, there may be more than two choices or options to be considered; for examples, determining/selecting 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.
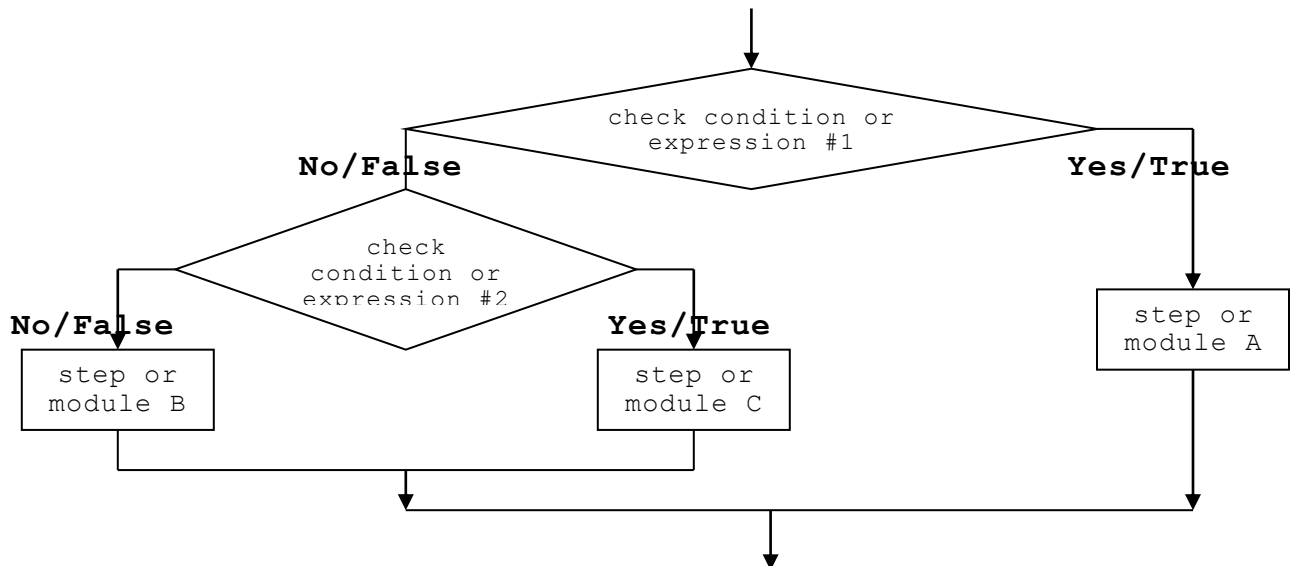
The flowchart is given as follows,

Figure 3 Extended **if-else if-else** conditional structure

The general syntax of the extended **if-else if-else** 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-else** extension can be written.

```
void printDay(int iDay) {
  if (iDay == 1)    {
    printf("\nIt is Sunday!");
  } else if (iDay == 2) {
    printf("\nIt is Monday!");
  } else if (iDay == 3) {
    printf( "\nIt is Tuesday!" );
  } else if (iDay == 4) {
    printf("\nIt is Wednesday!");
  } else if (iDay == 5) {
    printf( "\nIt is Thursday!" );
  } else if (iDay == 6) {
    printf("\nIt is Friday!");
  } else if (iDay == 7) {
    printf("\nIt is Saturday!");
  } else {
    printf("\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, which will be introduced in the next lectures.