Lab 5

Control Structure – Selection (continue)

if...else...else if statement

This statement is used when we need to make a choice between more than two alternatives.

Syntax:

```
if (condition1)
  {
   // statement 1
  }
else if (condition2)
      {
       // statement 2
      }
    .
    .   // more else if statements
    .
   else
       {
         // statement 3
       }
```

Example 1:

```
int main()
{
  int num;
  cout << "Enter a number: ";
  cin >> num;
  if (num == 1)
    {
      cout << "The number is 1";
    }
  else if (num == 2)
        {
          cout << "The number is 2";
        }
       else
        {
          cout << "The number is not 1 or 2";
        }
}
```

Output:

```
Enter a number: 2
The number is 2
```

Example 2:

// Program to check whether an integer is positive, negative or zero

```
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 line is always printed.";
      }
```

Output 1

```
Enter an integer: 1

You entered a positive integer: 1.

This line is always printed.
```

Output 2

```
Enter an integer: -2

You entered a negative integer: -2.

This line is always printed.
```

Output 3

```
Enter an integer: 0

You entered 0.

This line is always printed.
```

Example 3:

```
int main()
{
   int num;
   cout<<"Enter an integer number between 1 & 99999: ";
   cin>>num;

   if (num <100 && num>=1)
    {
      cout<<"Its a two digit number";
    }
   else if (num <1000 && num>=100)
         {
         cout<<"Its a three digit number";
        }
      else if (num <10000 && num>=1000)
            {
             cout<<"Its a four digit number";
           }
          else if (num <100000 && num>=10000)
                 {
                 cout<<"Its a five digit number";
                 }
               else
               {
                cout<<"number is not between 1 & 99999";
               }
        }
```

Output:

```
Enter an integer number between 1 & 99999: 8976
Its a four digit number
```

Trace above program with following input and run the program to check the output:

i. 33
ii. 555
iii. 4444

Nested if...else

Nested if statements is an if statement inside another if statement.

Syntax:

```
if (condition1)
{
     // Executes when condition1 is true
 if (condition2)
       {
       // Executes when condition2 is true
        }
}
```

Example 4:

```
int main()
 {
    int i = 10;
    if (i  >= 10)    // First if statement
       {
         if (i < 15)
            cout<<"i is smaller than 15\n";
         if (i < 12)
            cout<<"i is smaller than 12 too\n";
         else
            cout<<"i is greater than 15";
        }
   }
```

Output:

```
i is smaller than 15
i is smaller than 12 too
```

Replace i with following values and trace the output:

i. 3
ii. 50

Exercise:

1. Write a C++ program to check whether a number entered by the user is Even or Odd.
2. Write a C++ program to check whether an alphabet entered by the user is a vowel or a consonant.
3. Based on following table, write a C++ program to determine the weather condition based on temperature (in Celsius) entered by user:

Temperature	Condition
30°C and above	Hot
23-29°C	Warm
17-23°C	Comfortable
10-16°C	Cool
0-10°C	Cold
0°C and below	Freezing point

4. ABCD Retail is giving discounts based on customers' purchases. You are required to prepare a C++ program that will display whether a customer's purchase is eligible for discount and further calculate the amount of price that the customer needs to pay. The program also needs to display if the customer is not eligible for discount and amount of price they need to pay.

Purchase	Status
Above RM500	Eligible for Discount
RM 501 – RM 1000	5% discount
RM 1000 and above	8% discount
RM500 and below	Not eligible for discount

5. Write a C++ program by using **`switch`**…**`case`** that represent the pseudocode below:

```
START
      PROMPT
            Choose a menu [1/2]
            1. Orange Juice
            2. Apple Juice
            Enter your choice:

      READ choice
      PROMPT Enter quantity:
      READ quantity

      CASE 1
            price = 2.90
      CASE 2
            price = 3.90
      DEFAULT
            PRINT
                  Invalid Choice.
      PROMPT Do you have a coupon for discount [Y-yes/N-no]:

      CASE 'Y'
      CASE 'y'
            discount = 10%

      FORMULA
            discountRM = price * discount;
            priceAfterDiscount = price - normalPrice;

      PRINT price, priceAfterDiscount
END
```