DECIMAL TO HEXADECIMAL CONVERSION

AIM: To implement decimal number into hexadecimal number conversion.

THEORY:

The hexadecimal system (shortly hex), uses the number 16 as its base (radix). As a base-16 numeral system, it uses 16 symbols. These are the 10 decimal digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9) and the first six letters of the English alphabet (A, B, C, D, E, F). The letters are used because of the need to represent the values 10, 11, 12, 13, 14 and 15 each in one single symbol.

Hex is used in mathematics and information technologies as a more friendly way to represent binary numbers. Each hex digit represents four binary digits; therefore, hex is a language to write binary in an abbreviated form.

Four binary digits (also called nibbles) make up half a byte. This means one byte can carry binary values from 0000 0000 to 1111 1111. In hex, these can be represented in a friendlier fashion, ranging from 00 to FF.

In html programming, colors can be represented by a 6-digit hexadecimal number: FFFFFF represents white whereas 000000 represents black.

ALGORITHM:

Step 1: START.

Step 2: Divide the decimal number by 16.

Step 3: Treat the division as an integer division.

Step 4: Write down the remainder (in hexadecimal).

Step 5: Divide the result again by 16.

Step 6: Treat the division as an integer division.

Step 7: Repeat step 2 and 3 until result is 0.

Step 8: The hex value is the digit sequence of the remainders from the last to first.

Step 9: STOP.

PROGRAM:

```cpp
#include<iostream>
#include<cmath>

using namespace std;

void d2h(int dec)
{
    char hex[100];



    int t=dec,r,i=1,j;


    while(t!=0)
    {
        r=t%16;
        if(r<10)
            hex[i++]=r+48;
        else
            hex[i++]=r+55;
        t=t/16;
    }
    cout<<"Hexadecimal equivalent of "<<dec<<" is ";
    for(j=i-1;j>0;j--)
        cout<<hex[j];
}

int main()
{
    cout<<"Give the decimal number\n";
    int n;
    cin>>n;


    d2h(n);


    return 0;
}
```
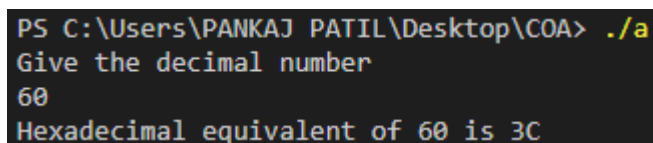
OUTPUT:

```
PS C:\Users\PANKAJ PATIL\Desktop\COA> ./a
Give the decimal number
60
Hexadecimal equivalent of 60 is 3C
```

CONCLUSION:

The Program for decimal to hexadecimal Conversion was successfully written, debugged , compiled and executed.