

## OCTAL TO HEXADECIMAL CONVERSION

**AIM:** To implement octal number to hexadecimal number conversion.

### THEORY:

OCTAL to HEXADECIMAL conversion

Before understanding the concept of octal to hexadecimal conversion we must have some idea about octal and hexadecimal number system...

Octal number system

An octal system or it is called the base eight system . The digits in octal maths are 0,1,2,3,4,5,6,7. The value of "!" is written as eight and 0 as ones or 108 .

Hexadecimal number system

In the hexadecimal, we need to have the digits from 0 through 15. For this single solitary digits are required that stands for the values of 11,12,13,14,15 i.e. in counting the hexadecimal the sixteen hexadecimal numerals are- 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F In other words A is 10 in regular basis, B is 11, C is 12 and so on...

OCTAL TO HEXADECIMAL conversion

Step 1: Octal to Binary Conversion

7	5	2
111	101	010

So binary equivalent is 111101010.

Step 2: Binary to Hex conversion

0001	1110	1010
1	D	9

While converting from octal to hexadecimal unit, it is a usual practice to convert the octal to hexadecimal by converting the octal number into binary digit and then further to from binary to hexadecimal. For example to convert the number 536 from octal to hexadecimal.

### ALGORITHM:

Step 1: START.

Step 2: Find the equivalent binary number for each digit of the given hexadecimal number.

Step 3: Add 0's to the left if any of the binary equivalent is shorter than 4 bits.

Step 4: Separate the binary digits into groups, each containing 3 bits or digits from right to left.

Step 5: Add 0's to the left, if the last group contains less than 3 bits.

Step 6: Find the octal equivalent for each binary group.

Step 7: STOP.

## **PROGRAM:**

```
#include<iostream>
```

```
#include<cmath>
```

```
using namespace std;
```

```
int o;
```

```
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 "<<o<<" is ";
```

```
    for(j=i-1;j>0;j--)
```

```
        cout<<hex[j];
```

```
}
```

```
void o2h()
```

```
{
```

```

int d=0,r,n=o,i=0;

while(n!=0)
{
    r=n%10;
    if(r>7)
    {
        cout<<"The nuber is not octal\n";
        return;
    }

    n=n/10;

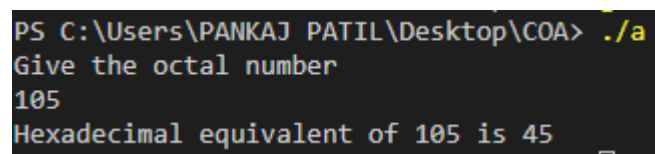
    d=d+r*pow(8,i++);
}

d2h(d);
}

int main()
{
    cout<<"Give the octal number\n";
    cin>>o;
    o2h();
}

```

### **OUTPUT:**



```

PS C:\Users\PANKAJ PATIL\Desktop\COA> ./a
Give the octal number
105
Hexadecimal equivalent of 105 is 45

```

**CONCLUSION:** The Program for octal to hexadecimal Conversion was successfully written, debugged , compiled and executed.