/\* Program to perform the **Number system conversions** using **UDF**. \*/

#include<iostream.h>

#include<string.h>

#include<ctype.h>

#include<math.h>

#include<conio.h>

int i; long p,a[80];

void decimal\_to\_binary (long num)

void binary\_to\_decimal (long num)

void decimal\_to\_octal (long num)

void octal\_to\_decimal (long num)

void decimal\_to\_hexa (long num)

void hexa\_to\_decimal (char b[80])

void main()

{

clrscr();

int ch; char choice,b[80];

long a;

cout<<"\n\nChoose from the given menu : ";

do{

cout<<"\n\n1. Binary to decimal ";

cout<<"\n\n2. Decimal to binary ";

cout<<"\n\n\n3. Decimal to octal ";

cout<<"\n\n4. Octal to decimal ";

cout<<"\n\n\n5. Decimal to Hexadecimal ";

cout<<"\n\n6. Hexadecimal to decimal ";

cout<<"\n\n\nEnter your choice : ";

cin>>ch;

switch(ch)

{

case 1: cout<<"\n\nEnter the binary number : ";

cin>>a;

binary\_to\_decimal(a);

break;

case 2: cout<<"\n\nEnter the decimal number : ";

cin>>a;

decimal\_to\_binary(a);

break;

case 3: cout<<"\n\nEnter the decimal number : ";

cin>>a;

decimal\_to\_octal(a);

break;

case 4: cout<<"\n\nEnter the octal number : ";

cin>>a;

octal\_to\_decimal(a);

break;

case 5: cout<<"\n\nEnter the decimal number : ";

cin>>a;

decimal\_to\_hexa(a);

break;

case 6: cout<<"\n\nEnter the Hexadecimal value : ";

cin.get();

cin.getline(b,80);

hexa\_to\_decimal(b);

break;

}

cout<<"\n\n\n\nWant to choose again : ";

cin>>choice;

}while(choice=='y'||choice=='Y');

getch();

}

void decimal\_to\_binary(long num)

{ i=0;

p=num;

while(num)

{

a[i]=num%2;

num=num/2;

i++;

}

cout<<"\n\nBinary equivalent of decimal number "<<p<<" => ";

for(int k=i-1; k>=0; k--)

cout<<a[k];

}

void binary\_to\_decimal(long num)

{ i=0;

p=num;

long no=0;

while(num)

{

a[i]= num%10 \* pow(2,i);

no+=a[i];

num=num/10;

i++;

}

cout<<"\n\nDecimal equivalent of binary number "<<p<<" => "<<no;

}

void decimal\_to\_octal(long num)

{ i=0;

p=num;

while(num)

{

a[i]=num%8;

num=num/8;

i++;

}

cout<<"\n\nOctal equivalent of decimal number "<<p<<" => ";

for(int k=i-1; k>=0; k--)

cout<<a[k];

}

void octal\_to\_decimal(long num)

{ i=0;

p=num;

long no=0;

while(num)

{

a[i]= num%10 \* pow(8,i);

no+=a[i];

num=num/10;

i++;

}

cout<<"\n\nDecimal equivalent of octal number "<<p<<" => "<<no;

}

void decimal\_to\_hexa(long num)

{ i=0; p=num;

while(num)

{

a[i]= num%16;

num=num/16;

i++;

}

cout<<"\n\nHexadecimal equivalent of decimal number "<<p<<" => ";

for(int k=i-1; k>=0; k--)

{ if(a[k]>=0&&a[k]<10)

cout<<a[k];

else

switch(a[k])

{

case 10: cout<<"A"; break;

case 11: cout<<"B"; break;

case 12: cout<<"C"; break;

case 13: cout<<"D"; break;

case 14: cout<<"E"; break;

case 15: cout<<"F"; break;

}//end of switch

} // end of for loop

}

void hexa\_to\_decimal(char b[80])

{ long d=0;

for(int l=strlen(b)-1,m=0; l>=0; l--,m++)

{

if(isdigit(b[l]))

{

a[l]=b[l];

a[l]=1+a[l]-49; // not value of '1' = 49 & '9'=57 in integer

a[l]=a[l]\*pow(16,m);

}

else if(isalpha(b[l]))

{

if(islower(b[l]))

b[l]=toupper(b[l]);

switch(b[l])

{ case 'A' : a[l]=10; a[l]=a[l]\* pow(16,m); break;

case 'B' : a[l]=11; a[l]=a[l]\* pow(16,m); break;

case 'C' : a[l]=12; a[l]=a[l]\* pow(16,m); break;

case 'D' : a[l]=13; a[l]=a[l]\* pow(16,m); break;

case 'E' : a[l]=14; a[l]=a[l]\* pow(16,m); break;

case 'F' : a[l]=15; a[l]=a[l]\* pow(16,m); break;

default : cout<<"\n\nInvalid Hexadecimal number .";

}

}

d+=a[l];

}

cout<<"\n\nThe equivalent decimal number of hexadecimal "<<b<<" => "<<d;

}

**Output:**

Choose from the given menu:

1. Binary to decimal

2. Decimal to binary

3. Decimal to octal

4. Octal to decimal

5. Decimal to Hexadecimal

6. Hexadecimal to decimal

Enter your choice : 1

Enter the binary number : 100011

Decimal equivalent of binary number 100011 => 35

Want to choose again : y

1. Binary to decimal

2. Decimal to binary

3. Decimal to octal

4. Octal to decimal

5. Decimal to Hexadecimal

6. Hexadecimal to decimal

Enter your choice : 2

Enter the decimal number : 35

Binary equivalent of decimal number 35 => 100011

Want to choose again : y

1. Binary to decimal

2. Decimal to binary

3. Decimal to octal

4. Octal to decimal

5. Decimal to Hexadecimal

6. Hexadecimal to decimal

Enter your choice : 3

Enter the decimal number : 25

Octal equivalent of decimal number 25 => 31

Want to choose again : y

1. Binary to decimal

2. Decimal to binary

3. Decimal to octal

4. Octal to decimal

5. Decimal to Hexadecimal

6. Hexadecimal to decimal

Enter your choice : 4

Enter the octal number : 31

Decimal equivalent of octal number 31 => 25

Want to choose again : y

1. Binary to decimal

2. Decimal to binary

3. Decimal to octal

4. Octal to decimal

5. Decimal to Hexadecimal

6. Hexadecimal to decimal

Enter your choice :5

Enter the decimal number : 26

Hexadecimal equivalent of decimal number 26 => 1A

Want to choose again : y

1. Binary to decimal

2. Decimal to binary

3. Decimal to octal

4. Octal to decimal

5. Decimal to Hexadecimal

6. Hexadecimal to decimal

Enter your choice :6

Enter the Hexadecimal value : 1A

The equivalent decimal number of hexadecimal 1A => 26

Want to choose again : N