NUMBER SYSTEM CONVERSION

Introduction

The number system is used for representing the information. In this project the user has the choice to give the input in any order(based on the choice) to get the required number system like decimal to binary and vice versa. The application of this is used to avoid hacking ,for encryption and avoids misuse of data. Most of all computer's architecture is in the form of number system [oct,hex].

High Level Requirements

Features of my project

\* HL-1 System should take the input based on the choice given by the user

\* HL-2 System able to convert the input numbers into any other number system like decimal,hex,oct,binary.

\* HL-3 Output sould displayed without any errors

Low Level Requirements

\*\* HL-1\_LL1 System need to verify whether the given input is in correct form or not.

\* HL-1\_LL2 If input it is not in required system needs allow user to re enter the input.

\*\* HL-2\_LL1 System must know the all conversion techniques with the help of codes.

\* HL-2\_LL2 System should consider time factor and it shoud give output in less time.

\*\* HL-3\_LL1 System must give the output in the defined way(like binary output must be with 0's and 1 forms).

\* HL-3\_LL2 Output must be understood by the user.

SWOT Analysis

Strenghts

\* Avalibility of resources

\* Research

\* Devolapment of system

\* Applying skills

Weaknesses

\* Time

\* Complexity of system

\* Deadlines

\* Does not include negative number

Opportunities

\* Optimization of current system

\* Enhancement of system efficiency

\* Can be used for encryption

Threats

\* Different innovative methods will become threat

\* Obstacles are faced

4W'S AND 1H

Who

\* Information to the students and usefull in industry

What

\* A person can convert data into octal,gray,binary and excess-3 forms

When

\* Implemented at intital stages of making complex circuits

Where

\* Can be used by students and circuit devolapers and also used for encryption of data

How

\* This project can perform various calculations at the same time make users task smooth and effortless

Research

|  |  |  |  |
| --- | --- | --- | --- |
| **Decimal** | **Binary** | **Octal** | **Hexadecimal** |
| 0 | 0000 | 0 | 0 |
| 1 | 0001 | 1 | 1 |
| 2 | 0010 | 2 | 2 |
| 3 | 0011 | 3 | 3 |
| 4 | 0100 | 4 | 4 |
| 5 | 0101 | 5 | 5 |
| 6 | 0110 | 6 | 6 |
| 7 | 0111 | 7 | 7 |
| 8 | 1000 | 10 | 8 |
| 9 | 1001 | 11 | 9 |
| 10 | 1010 | 12 | A |
| 11 | 1011 | 13 | B |
| 12 | 1100 | 14 | C |
| 13 | 1101 | 15 | D |

Code

include <stdio.h>

#include <string.h>

#include <ctype.h>

#include <stdlib.h>

#include<math.h>

void welcome()

{

printf("Welcome to the Base Converter\n");

printf("Press 1 to Convert value from Decimal to Binary\n");

printf("Press 2 to Convert value from Decimal to Octal\n");

printf("Press 3 to Convert value from Decimal to Hexa \n");

printf("Press 4 to Convert value from Binary to Decimal \n");

printf("Press 5 to Convert value from Octal to Decimal \n");

printf("Press 6 to Convert value from hex to Decimal \n");

printf("Press 7 to exit!!!\n");

}

void exited(){

printf("\*\*\*\*\*\*\*\*\*\*\*Thank You For Using Our Converter\*\*\*\*\*\*\*\*\*\*\*\n\n");

}

void decitobina()

{

int a[60],n,i;

printf("\nEnter the decimal number: ");

scanf("%d",&n);

for(i=0;n>0;i++)

{

a[i]=n%2;

n=n/2;

}

welcome();

printf("\nBinary is :");

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

{

printf("%d",a[i]);

}

}

void decitoocta()

{

int a[60],n,i;

printf("\nEnter the decimal number: ");

scanf("%d",&n);

for(i=0;n>0;i++)

{

a[i]=n%8;

n=n/8;

}

welcome();

printf("\nOctal is :");

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

{

printf("%d",a[i]);

}

}

void decitohexa()

{

int a, di;

char hexa[60];

printf("\nPlease Enter a decimal value : ");

scanf("%d",&a);

di = a;

for(int i = 0; di >= 1 ;i++)

{

if(di%16 == 0)

hexa[i] = '0';

else if(di%16 == 1)

hexa[i] = '1';

else if(di%16 == 2)

hexa[i] = '2';

else if(di%16 == 3)

hexa[i] = '3';

else if(di%16 == 4)

hexa[i] = '4';

else if(di%16 == 5)

hexa[i] = '5';

else if(di%16 == 6)

hexa[i] = '6';

else if(di%16 == 7)

hexa[i] = '7';

else if(di%16 == 8)

hexa[i] = '8';

else if(di%16 == 9)

hexa[i] = '9';

else if(di%16 == 10)

hexa[i] = 'A';

else if(di%16 == 11)

hexa[i] = 'B';

else if(di%16 == 12)

hexa[i] = 'C';

else if(di%16 == 13)

hexa[i] = 'D';

else if(di%16 == 14)

hexa[i] = 'E';

else if(di%16 == 15)

hexa[i] = 'F';

di = di/16;

}

welcome();

printf("\nHexa is : ");

for(int j = strlen(hexa)-1; j >= 0; j--)

{

printf("%c",hexa[j]);

}

}

void bitodeci()

{

int n;

printf("enter the binary number in 0's and 1's");

scanf("%d",&n);

int dec = 0, i = 0, rem;

while (n!=0)

{

rem = n % 10;

n /= 10;

dec += rem \* pow(2, i);

++i;

}

printf("%d", dec);

}

void octtodeci()

{

int n;

printf("enter the octal number");

scanf("%d",&n);

int d=0,i=0;

while(n!=0)

{

d+=(n%10)\*pow(8,i);

++i;

n/=10;

}

i=1;

printf("%d",d);

}

void hextodeci()

{

int d=0, rem, i=0, len=0;

char hexnum[20];

printf("Enter any Hexadecimal Number: ");

scanf("%s", hexnum);

while(hexnum[i]!='\0')

{

len++;

i++;

}

len--;

i=0;

while(len>=0)

{

rem = hexnum[len];

if(rem>=48 && rem<=57)

rem = rem-48;

else if(rem>=65 && rem<=70)

rem = rem-55;

else if(rem>=97 && rem<=102)

rem = rem-87;

else

{

printf("\nYou've entered an invalid Hexadecimal digit");

getch();

return 0;

}

d= d + (rem\*pow(16, i));

len--;

i++;

}

printf("\nEquivalent Decimal Value = %d", d);

getch();

}

int main()

{

welcome();

while(1)

{

int ch;

printf("\n\nChoice: ");

scanf("%d",&ch);

if(ch != 7)

{

switch(ch)

{

case 1:

decitobina();

break;

case 2:

decitoocta();

break;

case 3:

decitohexa();

break;

case 4:

bitodeci();

break;

case 5:

octtodeci();

break;

case 6:

hextodeci();

break;

default:

printf("\nInidentified Input\n");

break;

}

}

else

{

exited();

break;

}

}

}