cprogramto.com

C PROGRAM

C PROGRAM TO CONVERT BINARY TO FLOAT

NOVEMBER 25, 2013 | AKSHAY UPADHYAY | LEAVE A COMMENT

C program to convert Binary to float. **Binary for floating point** number can be represented in either or two ways i.e either with **IEEE754** 32 bit standard format or with binary point representation. Let us take an example :

Example :

- 1010.101100 = > 10.7 (Binary point representation)
- 0 10000010 01010110011001100110011 = > 10.7 (standard IEEE754 format)

C program to convert Binary to float

This post will convert the Binary point representation number to float, while you extend the same program, which will **convert the binary IEEE754** representation to floating point number.

You can see the below link for IEEE754 format theory and program:

- **IEEE754 standard format representation of float**
- **C program to convert IEEE754 binary to float**

You can also refer the following articles :

- C program to convert Binary to decimal
- C program to convert Decimal to binary
- C program to convert Float to binary

Steps to convert Binary to float in c:

1.) Separate integral and fractional part from the binary digits.

- (**Note :** While you can separate the integral and fractional part with some algorithm, but the most convenient way to separate is, by storing the binary point number in string format or character array, so that we can compare **'.'(binary point)** easily.)

2.) Integral part can be converted to decimal by, **multiplying** the binary digits, starting from the LSB(Least significant bit) or from right hand side, with 2 to the power of its position(start from zero) and adding the values.

for eg : 1010 : 1*2^3 + 0*2^2 + 1*2^1 + 0*2^0

=> 1010 : 8 + 0 + 2 + 0

=> 1010 : 10

3.) To convert the fractional part to floating value, **multiply** the binary digits, starting from MSB(most significant bit) or left hand side of fractional number, with 2 to the power of its negative position(start from one) and adding the values.

for eg : 0.1011 : 1*2^(-1) + 0*2^(-2) + 1*2^(-3) + 1*2^(-4)

=> 0.1011 : 0.5 + 0 + 0.125 + 0.0625

=> 0.1011 : 0.6895 = > ~ 0.7

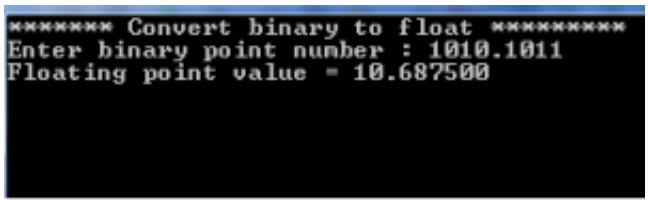
C program to convert Binary to float

```
#include<stdio.h>
#include<string.h>
#include<conio.h>

float pow(int, int);

int main()
{
    char digits[50];
    int befDec[50], aftDec[50];
    int aftDecDigits, befDecDigits, storeIntegral=0, i, j=0, k=0;
    float storeFractional=0, floatValue;
    char up = 'd';

    printf("******* Convert binary to float *********\n");

    //Taking binary digits in character arrary
    printf("Enter binary point number : ");
    scanf("%s",&digits);

    //Separating the integral and fractional part from the floating point value
    //strlen() is an inbuilt funtion defined in string.h header file
    for(i=0; i<strlen(digits); i++)
    {
        if(digits[i]=='.')
        {
            up='u';
        }
        else if(up=='d')
        {
            //ASCII value of 0 is 48, so when character is casted to integer, it
            befDec[i] = (int)digits[i]-48;
            k++;
        }
        else
        {
```

```
            aftDec[j] = (int)digits[i]-48;
            j++;
        }
    }

    // Storing the lenght of Integral and fractional
    befDecDigits = k;
    aftDecDigits = j;

    //Loop to convert the integral binary part to decimal
    j=0;
    for(i = befDecDigits-1; i>=0; i--)
    {
        storeIntegral = storeIntegral + (befDec[i] *(int) pow(2,j));
        j++;
    }

    //Loop to convert the fractoinal binary part to floating point value
    j = -1;
    for(i = 0; i<aftDecDigits; i++)
    {
        storeFractional = storeFractional + (aftDec[i]*pow(2,j));
        j--;
    }

    //Adding both the integral and fractional part to get the resultant value
    floatValue = storeIntegral + storeFractional;
    printf("Floating point value = %f\n\n\n\n\n",floatValue);
}

//Defining power function
float pow(int c, int d)
{
    float pow=1;
    if (d >= 0)
    {
        int i = 1;
        while (i <= d)
```

```
        {
            pow = pow * c;
            i++;
        }
    }
    else
    {
        int i = 0;
        while (i > d)
        {
            pow = pow/c;
            i--;
        }
    }
    return pow;
}
```

Output of C program to convert Binary to float



C program to convert Binary to float

Related Posts via Categories

- C program for Quick Sort
- C program for Selection Sort
- C program for Insertion Sort
- C program to convert float to binary
- C program to sort 2D array by row or column
- String.h – string functions in c
- C program to sort 2D array
- C program for ASCII number from ASCII code
- C program for ASCII code of number
- ASCII code print c program

BINARY CONVERSION FLOAT