**EXP NO: 26**

**DECIMAL TO BINARY CONVERSION**

**AIM:** To write a C program to implement decimal to binary conversion.

**ALGORITHM:**

1. Check if your number is odd or even.
2. If it's even, write 0 (proceeding backwards, adding binary digits to the left of the result).
3. Otherwise, if it's odd, write 1 (in the same way).
4. Divide your number by 2 (dropping any fraction) and go back to step 1. Repeat until your original number is 0.

**PROGRAM:**

#include<stdio.h>

int main()

{

int a[10],n,i;

printf("Enter the number to convert: ");

scanf("%d",&n);

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

{

a[i]=n%2;

n=n/2;

}

printf("\nBinary of Given Number is=");

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

{

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

}

return 0;

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.

**EXP NO: 27**

**DECIMAL TO HEXADECIMAL CONVERSION**

**AIM:** To write a C program to implement decimal to hexadecimal conversion.

**ALGORITHM:**

1. Start from the right-most digit. Its weight (or coefficient) is 1.
2. Multiply the weight of the position by its digit. Add the product to the result.  
   (0=0, 1=1, 2=2, … 9=9, A=10, B=11, C=12, D=13, E=14,F=15)
3. Move one digit to the left. Its weight is 16 times the previous weight.
4. Repeat 2 and 3 until you go through all decimal digits.

**PROGRAM:**

#include<stdio.h>

int main()

{

int n;

printf("enter the decimal number");

scanf("%d",&n);

printf("the hexa decimal value is:%x",n);

return 0;

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.

**EXP NO: 28**

**DECIMAL TO OCTAL CONVERSION**

**AIM:** To write a C program to implement decimal to octal conversion.

**ALGORITHM:**

1. Check if your number is odd or even.
2. If it's even, write 0 (proceeding backwards, adding octal digits to the left of the result).
3. Otherwise, if it's odd, write 1 (in the same way).
4. Divide your number by 8 (dropping any fraction) and go back to step 1. Repeat until your original number is 0.

**PROGRAM:**

#include<stdio.h>

int main()

{

int a[10],n,i;

printf("Enter the number to convert: ");

scanf("%d",&n);

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

{

a[i]=n%8;

n=n/8;

}

printf("\n Octal of Given Number is=");

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

{

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

}

return 0;

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.

**EXP NO: 29**

**BINARY TO DECIMAL CONVERSION**

**AIM:** To write a C program to implement binary to decimal conversion.

**ALGORITHM:**

1. Start
2. Read the binary number from the user, say ‘n’
3. Initialize the decimal number, d=0
4. Initialize i=0
5. Repeat while n != 0:
   * 1. Extract the last digit by: remainder = n % 10
     2. n = n/10
     3. d = d + (remainder \* 2<sup>i</sup>)
     4. Increment i by 1
6. Display the decimal number, d
7. Stop

**PROGRAM:**

#include <stdio.h>

void main()

{

int num, binary\_num, decimal\_num = 0, base = 1, rem;

printf (" Enter a binary number with the combination of 0s and 1s \n");

scanf (" %d", &num);

binary\_num = num;

while ( num > 0)

{

rem = num % 10;

decimal\_num = decimal\_num + rem \* base;

num = num / 10;

base = base \* 2;

}

printf ( " The binary number is %d \t", binary\_num);

printf (" \n The decimal number is %d \t", decimal\_num);

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.

**EXP NO: 30**

**HEXADECIMAL TO DECIMAL CONVERSION**

**AIM:** To write a C program to implement hexadecimal to decimal conversion.

**ALGORITHM:**

1. Start from the right-most digit. Its weight (or coefficient) is 1.
2. Multiply the weight of the position by its digit. Add the product to the result.  
   (0=0, 1=1, 2=2, … 9=9, A=10, B=11, C=12, D=13, E=14,F=15)
3. Move one digit to the left. Its weight is 16 times the previous weight.
4. Repeat 2 and 3 until you go through all hexadecimal digits.

**PROGRAM:**

#include<stdio.h>

int main()

{

int n;

printf("enter the hex decimal number");

scanf("%x",&n);

printf("the decimal value is:%d",n);

return 0;

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.

**EXP: 31**

**BINARY TO OCTAL**

**AIM:** To write a C program to implement Binary to Octal conversion.

**ALGORITHM:**

**PROGRAM:**

#include <stdio.h>

int main()

{

long int binarynum, octalnum = 0, j = 1, remainder;

printf("Enter the value for binary number: ");

scanf("%ld", &binarynum);

while (binarynum != 0)

{

remainder = binarynum % 10;

octalnum = octalnum + remainder \* j;

j = j \* 2;

binarynum = binarynum / 10;

}

printf("Equivalent octal value: %lo", octalnum);

return 0;

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.

**EXP: 32**

**OCTAL TO BINARY**

**AIM:** To write a C program to implement Octal to Binary conversion.

**ALGORITHM:**

**PROGRAM:**

#include <stdio.h>

int main()

{

char octalnum[100];

long i = 0;

printf("Enter any octal number: ");

scanf("%s", octalnum);

printf("Equivalent binary value: ");

while (octalnum[i])

{

switch (octalnum[i])

{

case '0':

printf("000"); break;

case '1':

printf("001"); break;

case '2':

printf("010"); break;

case '3':

printf("011"); break;

case '4':

printf("100"); break;

case '5':

printf("101"); break;

case '6':

printf("110"); break;

case '7':

printf("111"); break;

default:

printf("\n Invalid octal digit ");

return 0;

}

i++; }

return 0;

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.

**EXP: 33**

**BINARY TO HEXADECIMAL**

**AIM:** To write a C program to implement Binary to Hexadecimal conversion.

**ALGORITHM:**

**PROGRAM:**

#include <stdio.h>

int main() {

int num, binary\_num, decimal\_num = 0, base = 1, rem;

// Binary to Decimal conversion

printf("Enter a binary number: ");

scanf("%d", &num);

binary\_num = num;

while (num > 0) {

rem = num % 10;

decimal\_num = decimal\_num + rem \* base;

num = num / 10;

base = base \* 2;

}

// Print Binary and Decimal values

printf("The binary number is %d\n", binary\_num);

printf("The decimal number is %d\n", decimal\_num);

// Decimal to Hexadecimal conversion

printf("The hexadecimal value is: %x\n", decimal\_num);

return 0;

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.

**EXP: 34**

**HEXADECIMAL TO OCTAL**

**AIM:** To write a C program to implement Hexadecimal to Octal conversion.

**ALGORITHM:**

**PROGRAM:**

#include <stdio.h>

int main() {

int n, a[10], m, i;

printf("Enter the hexadecimal number: ");

scanf("%x", &n);

m = n; // Save the decimal value in variable m

printf("Decimal value: %d\n", m);

for (i = 0; m > 0; i++) {

a[i] = m % 8;

m = m / 8;

}

printf("Octal of Given Number is: ");

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

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

}

return 0;

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.

**EXP: 35**

**HEXADECIMAL TO BINARY**

**AIM:** To write a C program to implement hexadecimal to Binary conversion.

**ALGORITHM:**

**PROGRAM:**

#include <stdio.h>

int main() {

int n, a[10], m, i;

printf("Enter the hexadecimal number: ");

scanf("%x", &n);

m = n; // Save the decimal value in variable m

printf("Decimal value: %d\n", m);

for (i = 0; m > 0; i++) {

a[i] = m % 2;

m = m / 2;

}

printf("Binary of Given Number is: ");

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

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

}

return 0;

}

**INPUT:**

**OUTPUT:**

**RESULT:** Thus the program was executed successfully using DevC++.