IT 161_ Lab5

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Experiment 1: Write a C program to convert a given decimal number to its equivalent binary number.

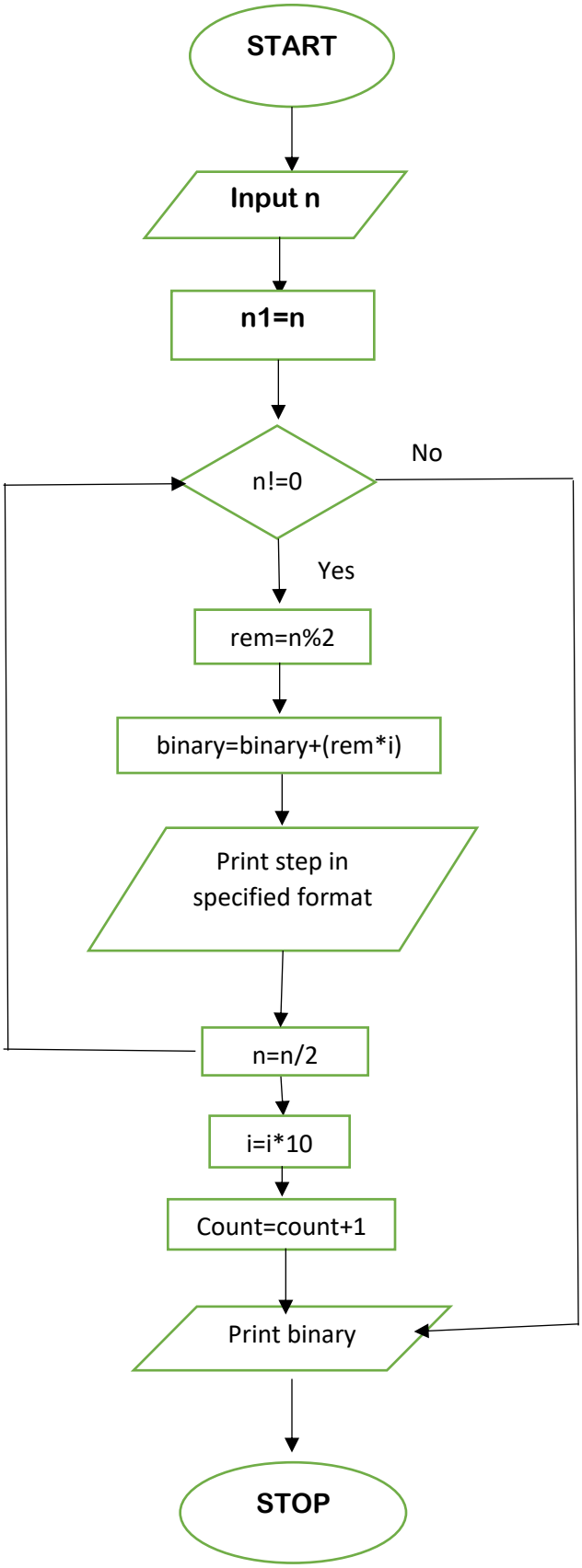
Objective: To create a C program to convert a decimal number to binary number.

Software: Online compiler and debugger for C

Methodology:

1. Declare variables n,rem,binary=0,i=1,count=1.
2. First input "n" is taken from user and stored in n1.
3. Check whether the input number is 0 or not. Follow steps 4-8 is the number is not 0. If input =0 then follow step 9 and 10.
4. Find n%2 and store it in rem.
5. Do binary+(rem*i) and update it to binary.
6. Divide the binary number by 2 and again check in step 3.
7. Do I*10 and update it to i.
8. Increment the value of count by 1.
9. Print the number stored in binary.
10. End the program.

Flowchart:


START
Input n
n1=n
n!=0
No
Yes
rem=n%2
binary=binary+(rem*i)
Print step in specified format
n=n/2
i=i*10
Count=count+1
Print binary
STOP

CODE:

```
#include <stdio.h>
int main()
{
   int n,rem,binary=0,i=1,count=1;
   printf("Enter Decimal number:");
   scanf("%d", &n);
   while(n!=0)
   {
      rem=n%2;
      binary=binary+(rem*i);
      printf("step\n%d:%d/2 quotient=%d\t remainder:%d\t\n",count,n,(n/2),rem);
      n=n/2;
      i=i*10;
      count=count+1;
   }
   printf("Binary number is:%d", binary);
   return 0;
}
```

RESULT:

Sample:

Enter decimal number: 17

Step

1. **17/2 Quotient=8 remainder= 1**

Step

2. **8/2 Quotient=4 remainder= 0**

Step

3. **4/2 Quotient=2 remainder= 0**

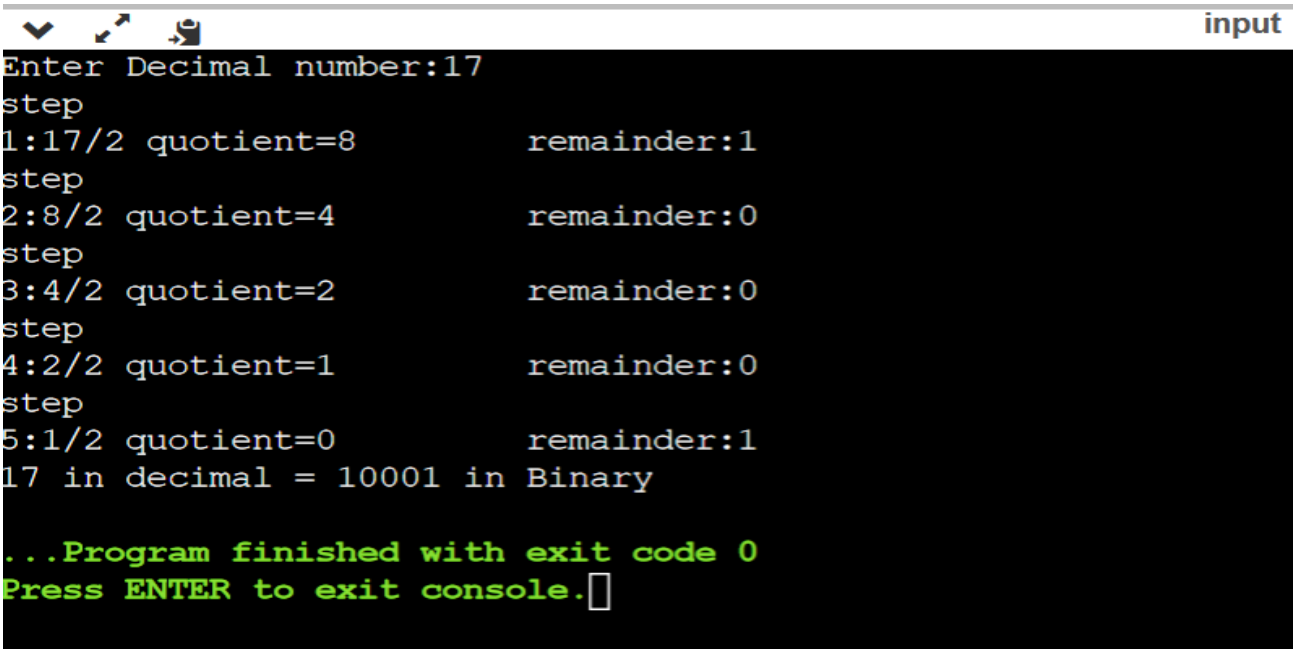
Step

4. **2/2 Quotient=1 remainder= 0**

Step

5. **1/2 Quotient=0 remainder= 1**

17 in decimal= 10001 in binary



Experiment 2

Objective: To create a C program to convert a given binary number to its equivalent decimal number.

Software: Online compiler and debugger for C

Methodology:

1.Declare variable binary, rem, deci=0, i=0.

2. A binary number is to be taken as input and stored in binary.

3. Check whether the binary number is 0 or not. If the number is not zero then follw steps 4-7. If number becomes 0, follow step 8.

4.Calculate reminder by taking binary%10 and store it in rem.

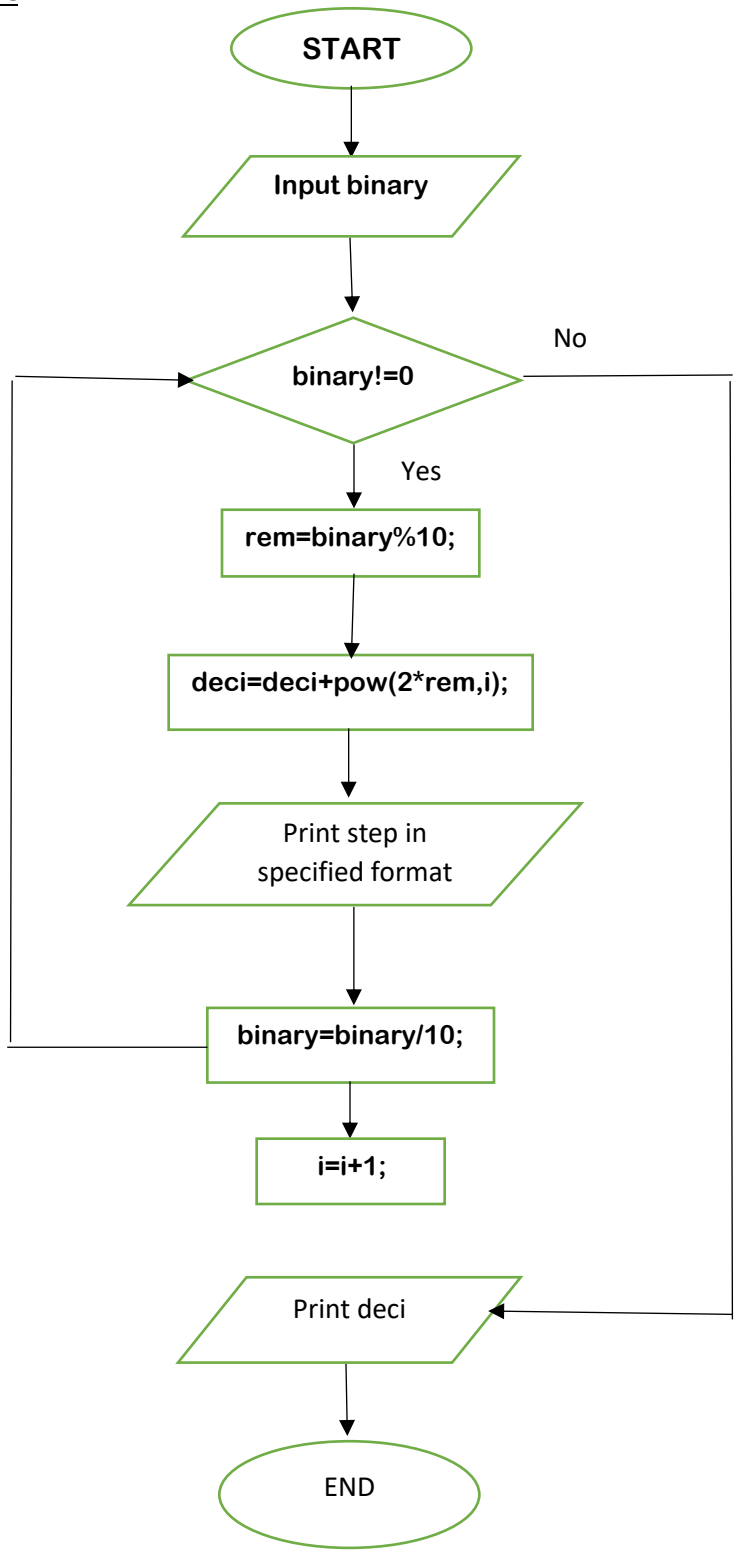
5.Then do deci= deci+pow(2*rem,i) and store it in deci.

6.After that divide the binary number by 10 and update it to binary and check the condition again.

7. Increment i by 1.

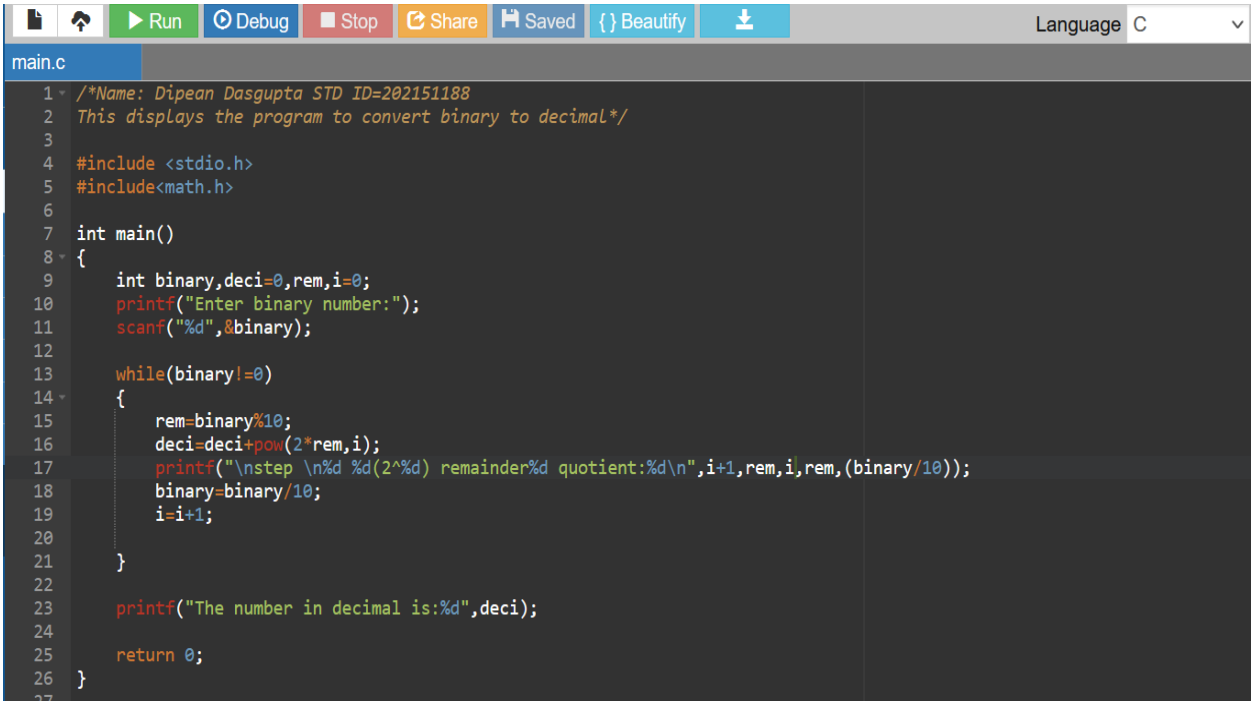
8. When the binary number becomes 0, then print the number stored in deci and stop the program.

Flowchart:


START
Input binary
binary!=0
No
Yes
rem=binary%10;
deci=deci+pow(2*rem,i);
Print step in specified format
binary=binary/10;
i=i+1;
Print deci
END

CODE:

```
#include <stdio.h>
#include<math.h>

int main()
{
   int binary,deci=0,rem,i=0;
   printf("Enter binary number:");
   scanf("%d",&binary);

   while(binary!=0)
   {
    rem=binary%10;
    deci=deci+pow(2*rem,i);
    printf("\nstep \n%d %d(2^%d) remainder%d quotient:%d\n",i+1,rem,i,rem,(binary/10));
quotient:%d\n",i+1,rem,i,rem,(binary/10));
    binary=binary/10;
    i=i+1;

   }

   printf("The number in decimal is:%d",deci);

   return 0;
}
```



RESULT:

Sample:

Enter Binary number:1101
Step
1 1*(2^0) remainder:1 quotient:110
Step
2 1*(2^1) remainder:0 quotient:11
Step
3 1*(2^2) remainder:1 quotient:1
Step
4 1*(2^3) remainder:1 quotient:0

The number in decimal is: 13