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F.Y.B.Tech Academic Year 2022-22

Subject - Programming and Problem solving
Trimester: 2

Name: Pranjay Beniwal Division: 2
Roll no: 102053 Batch: A3

Assignment -2(B).

Aim: Write algorithm and draw flowchart to convert given decimal number to binary

Objective:

1. To understand importance of flowchart for any programming mode

2. To learn simple flowchart symbols and arrows to define relationships

3. To understand and develop visual representation of flow of data

4. To learn and understand the conversion of decimal to binary.

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Theory:

1) Decimal to binary in C

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

int main() {
    int a[10], n, i;
    system("cls");
    printf("Enter the number to convert: ");
    scanf("%d", &n);
    for (i = n, 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;
}
```

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2) Decimal number →

Decimal number system is based on 10 digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9)

3) Binary Number →

This number system only uses 1 and 0 for expressing numbers

4) Algorithm →

A process or set of rules to be followed in calculations or other problem solving operations, especially by a computer

5) Flowchart →

A graphical representation of a computer program in relation to its sequence of functions

6) Pseudocode →

It is an artificial and informal language that helps programmers develop algorithms

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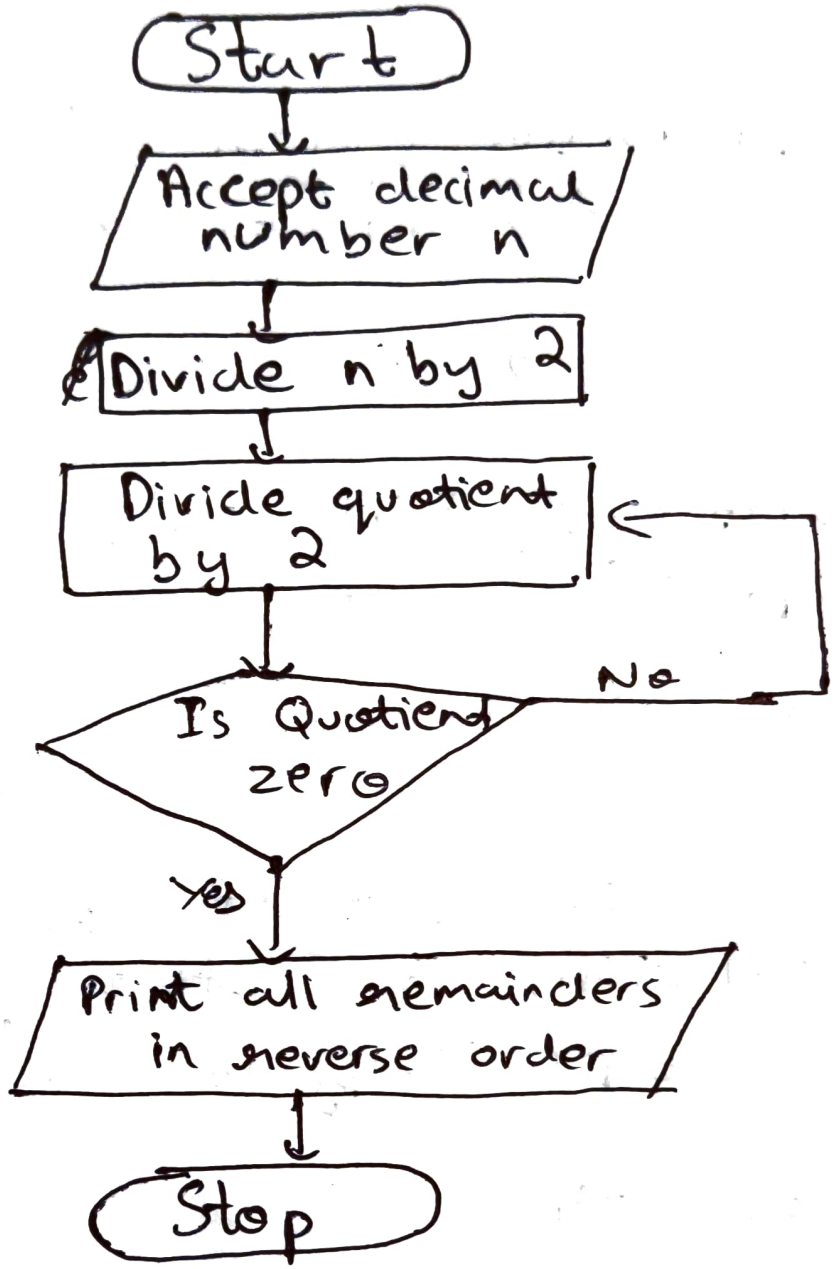
Algorithm:

Step 1: Start
Step 2: Accept decimal number n (I/O)
Step 3: Divide n by 2, note remainder and quotient and remainder (Process)
Step 4: Divide quotient by 2 and record the quotient and remainder (Process)
Step 5: Keep dividing each succesive quotient by 2 till you get a quotient of zero (Process)
Step 6: Print all remainders in reverse order (I/O)
Step 7: Stop.

Flowchart


Start
Accept decimal number n
Divide n by 2
Divide quotient by 2
Is Quotient zero
No
Yes
Print all remainders in reverse order
Stop

FAQ:

1. How do you convert decimal to binary?

→ Divide the number by two and note the remainder repeat this till you get remainder zero. write all the obtained remainder in reverse order. This is your binary number.

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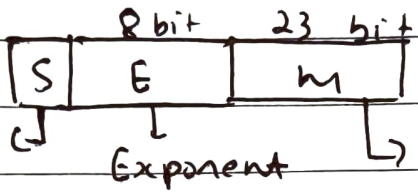
2. How do you convert fractional decimal value to binary numbers?

→ we use floating point to do so

Value = $W = (-1)^S \times 2^{E-127} \times (1.M)$

where $(0 < F < 255)$



3. What is the decimal equivalent of binary number 110?

→ 6.

Conclusion: Thus we learnt how to convert decimal number into binary with its algorithm and flowchart