OCTAL TO BINARY CONVERSION

EXP NO: 31

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

ALGORITHM:

1. Initialize an empty string or array to store the binary equivalent.
2. Extract each digit of the octal number by taking the remainder when the number is divided by 10.
3. Convert the extracted octal digit to its 3-bit binary equivalent using a lookup table or direct mapping (e.g., 0 → 000, 1 → 001, 2 → 010, etc.).
4. Append the 3-bit binary equivalent to the result (you can either prepend or append depending on how you process digits).
5. Remove the last digit from the octal number by dividing it by 10.
6. Repeat steps 2-5 until the octal number becomes 0.
7. Print the binary equivalent string or array as the binary representation of the octal number.

PROGRAM/OUTPUT SS:

octal to binary.cpp

```c
#include <stdio.h>
#include <math.h>
int OctalToDecimal(int n) {
    int p = 0, decimal = 0, r;
    while (n > 0) {
        r = n % 10;
        n = n / 10;
        decimal = decimal + r * pow(8, p);
        ++p;
    }
    return decimal;
}
void DecimalToBinary(int n) {
    if (n == 0) {
        printf("0");
        return;
    }
    int binary[32];
    int i = 0;
    while (n > 0) {
        binary[i] = n % 2;
        n = n / 2;
        i++;
    }
    for (int j = i - 1; j >= 0; j--) {
        printf("%d", binary[j]);
    }
}
int main() {
    int octal, decimal;
    printf("Enter Octal: ");
    scanf("%d", &octal);
    decimal = OctalToDecimal(octal);
    printf("Binary of Octal Number %d is : ", octal);
    DecimalToBinary(decimal);
    printf("\n");
    return 0;
}
```

```
C:\Users\praba\OneDrive\Des
Enter Octal: 45
Binary of Octal Number 45 is : 100101

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Process exited after 2.326 seconds with return value 0
Press any key to continue . . .
```

RESULT: Thus the C program has been executed successfully by DevC++.