

SRM INSTITUTE OF SCIENCE AND
TECHNOLOGY
NCR CAMPUS

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|-----------------------|----------------------------------|
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| Branch-Section | CSE-I |
| Year/Semester | 2 nd /4 th |

Q1: Write a recursive program to convert a decimal number to binary.

WhatsApp x | lab 4 for group 2 x | Q1: Write a recursive program x | Meet - mek-bhsi-epi x | Decimal to binary number us x

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main.cpp

```
1 #include<bits/stdc++.h>
2 using namespace std;
3
4 void deci_to_bin(int x, string & bin_num)
5 {
6
7     // Base Case
8     if (x <= 1)
9         bin_num += (char)(x + '0');
10    else {
11
12        // Recursion call
13        deci_to_bin(x / 2, bin_num);
14
15        // If x is divisible by 2
16        if(x%2)
17            bin_num += '1';
18
19        else
20            bin_num += '0';
21    }
22 }
23
24
25 int main()
26 {
27     string bin_num = "";
28     deci_to_bin(35768, bin_num);
29
30     cout<<bin_num;
31     return 0;
32 }
```

input

1000101110111000

...Program finished with exit code 0
Press ENTER to exit console.

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Q2: Write a recursive program to solve the tower of Hanoi problem. Given three pegs A , B,C and number of disks n, the program should print the sequence of moves of the disks from one peg to other peg in order to solve the problem. Initially all the n disks are on peg A and they need to be moved to peg C.

code

```
1 #include<iostream>
2 #include<vector>
3 #include<algorithm>
4
5 using namespace std;
6
7 void hanoi(int n, char a, char b, char c)
8 {
9     if(n == 1)
10     { cout<<"Move disk from "<<a<<" to"<<c<<endl;return;}
11     hanoi(n-1, a, c, b);
12
13     cout<<"Move disk from "<<a<<" to"<<c<<endl;
14     hanoi(n-1, b, c, a);
15 }
16
17 int main(){
18     int n;
19     cout<<endl<<"Enter the no: ";
20     cin>>n;
21
22     hanoi(n, 'A', 'B', 'C');
23
24     return 0;}
```

Output:

The screenshot shows the OnlineGDB website interface. The left sidebar contains navigation links: OnlineGDB beta, online compiler and debugger for c/c++, code. compile. run. debug. share., IDE, My Projects, Classroom (new), Learn Programming, Programming Questions, We are Hiring, Sign Up, and Login. Below these are social media icons for Facebook, Twitter, and a plus sign with 36.4K. The main area displays a C++ program for the Tower of Hanoi puzzle. The program includes a recursive function `hanoi` and a `main` function that takes input `n` and calls `hanoi(1, 'A', 'B', 'C', n)`. The output shows the sequence of moves for `n=4`. The bottom of the sidebar contains links: About, FAQ, Blog, Terms of Use, Contact Us, GDB Tutorial, Credits, Privacy, and Copyright 2016 - 2021 GDB Online.