**Problem Statement:**

Design a menu-driven program that allows users to perform various mathematical operations using recursion. The program should provide options to calculate the Highest Common Factor (HCF), Lowest Common Multiple (LCM), Factorial, and Fibonacci series. The user should be able to choose any of these operations from a menu and provide the required inputs.

The program should implement the following functionalities:

1. HCF Calculation:

2. LCM Calculation:

3. Factorial Calculation:

4. Fibonacci Series:

5. Exit:

The program should display a menu with the above options and allow the user to select an operation by entering the corresponding menu number. After executing the selected operation, the program should return to the menu and continue until the user chooses the exit option.

**Source Code:**

#include<stdio.h>

int num;

int num1;

int num2;

int n;

int febonacci(int num)

{

if(num == 0)

{

return 0;

}

else if(num == 1)

{

return 1;

}

else

{

return febonacci(num-1) + febonacci(num-2);

}

}

int Hcf(int num1, int num2)

{

if(num1 == 1 && num2 == 1)

{

return 1;

}

else if(num1 > num2)

{

return Hcf(num1-num2, num2);

}

else if(num2 > num1)

{

return Hcf(num1, num2-num1);

}

else

{

return num1;

}

}

int factorial(int n)

{

if(n == 0)

{

return 1;

}

else

{

return n\*factorial(n-1);

}

}

int lcm(n,n1)

{

static int least = 1;

if(least % n==0 && least % n1==0)

{

return least;

}

else

{

least++;

lcm(n,n1);

return least;

}

}

int main()

{

int ch;

printf("Enter your choice : 1 OR 2 OR 3 OR 4 : ");

scanf("%d", &ch);

lable:

switch (ch)

{

case 1:

printf("\nEnter a number : ");

scanf("%d", &num);

printf("\n%d", febonacci(num));

break;

case 2:

printf("\nEnter two numbers : ");

scanf("%d %d", &num1, &num2);

printf("\nHCF of %d and %d is : %d",num1, num2, Hcf(num1,num2));

break;

case 3:

printf("\nEnter a number : ");

scanf("%d", &n);

printf("\nFactorial of %d is = %d",n,factorial(n));

break;

case 4:

printf("\nEnter a number : ");

scanf("%d", &n);

int n1;

printf("\nEnter 2 number : ");

scanf("%d", &n1);

printf("\nLCM of %d and %d is = %d",n,n1,lcm(n,n1));

break;

default:

printf("\nInvalid Choice!");

break;

}

printf("\nEnter choice again : ");

scanf("%d", &ch);

if(ch==1 || ch==2|| ch==3 || ch==4)

{

goto lable;

}

else

{

printf("\nInvalid choice ");

}

return 0;

}

**Output:**

