## ES202

## Assignment-IV

## C Programming Exercises

1. [Write a C program to print all-natural numbers between 1 to n using recursion](https://codeforwin.org/2016/02/c-program-to-print-all-natural-numbers-in-given-range-using-recursion.html).

Source Code:

#include <stdio.h>

int PrintNum(int n,int lim)

{

if(n<=lim)

printf("%d ",n);

PrintNum(++n,lim);

}

void main()

{

int l;

printf("Enter limit: ");

scanf("%d",&l);

PrintNum(1,l);

}

Output:Graphical user interface, text

Description automatically generated

1. [Write a C program to print all even or odd numbers in given range using recursion](https://codeforwin.org/2016/03/c-program-to-print-even-odd-numbers-using-recursion.html).

Source Code:

#include <stdio.h>

void even(int n,int lim)

{

if(n<=lim&&n%2==0)

{

printf("%d ",n);

if(n%2==0)

n+=2;

else

++n;

even(n,lim);

}

}

void odd(int n,int lim)

{

if(n<=lim&&n%2!=0)

{

printf("%d ",n);

if(n%2!=0)

n+=2;

else

++n;

odd(n,lim);

}

}

int main()

{

int s,e,c;

printf("Enter range: ");

scanf("%d %d",&s,&e);

printf("Enter 1 for odd and 2 for even: ");

scanf("%d",&c);

if(c==1)

odd(s,e);

else if(c==2)

even(s,e);

return 0;

}

Output:Text

Description automatically generated

1. [Write a C program to find sum of all-natural numbers between 1 to n using recursion](https://codeforwin.org/2016/02/c-program-to-find-sum-of-natural-numbers-using-recursion.html).

Source Code:

#include <stdio.h>

int Sum(int n)

{if (n != 0)

return n + Sum(n - 1);

else

return n;

}

int main()

{

int l;

printf("Enter number of terms: ");

scanf("%d",&l);

printf("Sum of first %d natural numbers: %d ",l,Sum(l));

return 0;

}

Output:Text

Description automatically generated

1. [Write a C program to find sum of all even or odd numbers in given range using recursion](https://codeforwin.org/2016/03/c-program-to-find-sum-of-even-odd-number-using-recursion.html).

Source Code:

#include <stdio.h>

int sumOfEvenOdd(int s, int e)

{

if(s > e)

return 0;

else

return (s + sumOfEvenOdd(s + 2, e));

}

int main()

{

int n1, n2;

printf("Enter range: \n");

scanf("%d",&n1);

scanf("%d",&n2);

if(n1%2==0)

printf("Sum of even numbers in the given range: %d",sumOfEvenOdd(n1,n2));

else

printf("Sum of odd numbers in the given range: %d",sumOfEvenOdd(n1,n2));

return 0;

}

Output:Graphical user interface, text, application

Description automatically generated

1. [Write a C program to find reverse of any number using recursion](https://codeforwin.org/2016/03/c-program-to-find-reverse-of-number-using-recursion.html).

Source Code:

#include <stdio.h>

int sum=0,rem;

int reverse(int n)

{

if(n!=0)

{

rem=n%10;

sum=sum\*10+rem;

reverse(n/10);

}

return sum;

}

int main()

{

int n;

printf("Enter number: ");

scanf("%d",&n);

printf("Reverse of %d is %d",n,reverse(n));

return 0;

}

Output:Graphical user interface

Description automatically generated

1. [Write a C program to check whether a number is palindrome or not using recursion](https://codeforwin.org/2016/03/c-program-to-check-palindrome-number-using-recursion.html).

Source Code:

#include <stdio.h>

int sum=0,rem;

int reverse(int n)

{

if(n!=0)

{

rem=n%10;

sum=sum\*10+rem;

reverse(n/10);

}

return sum;

}

int main()

{

int n;

printf("Enter number: ");

scanf("%d",&n);

if(n==reverse(n))

printf("%d is a Palindrome number.",n);

else

printf("%d is not a Palindrome number.",n);

return 0;

}

Output:

Graphical user interface, application

Description automatically generated

1. [Write a C program to find sum of digits of a given number using recursion](https://codeforwin.org/2016/03/c-program-to-calculate-sum-of-digits-using-recursion.html).

Source Code:

#include <stdio.h>

int sum=0;

int SoD(int n)

{

if(n!=0)

{

sum+=n%10;

SoD(n/10);

}

return sum;

}

void main()

{

int n;

printf("Enter number: ");

scanf("%d",&n);

printf("Sum of Digits of %d is %d. ",n,SoD(n));

return 0;

}

Output:

Graphical user interface, application

Description automatically generated

1. [Write a C program to generate nth Fibonacci term using recursion](https://codeforwin.org/2016/02/c-program-to-generate-nth-fibonacci-series-using-recursion.html).

Source Code:

#include <stdio.h>

int fibo(int num)

{

if (num == 0)

{

return 0;

}

else if (num == 1)

{

return 1;

}

else

{

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

}

}

void main()

{

int n;

printf("Enter which term to print from the Fibonacci Series: ");

scanf("%d",&n);

if (n < 0)

{

printf("Fibonacci of negative number is not possible.\n");

}

else

{

printf("The %d number in fibonacci series is %d\n", n, fibo(n-1));

}

return 0;

}

Output:Graphical user interface, text

Description automatically generated

1. [Write a C program to find GCD (HCF) of two numbers using recursion](https://codeforwin.org/2016/03/c-program-to-find-gcd-of-two-numbers-using-recursion.html).

Source Code:

#include <stdio.h>

int hcf(int a,int b)

{

if (b != 0)

return hcf(b, a % b);

else

return a;

}

int main()

{

int n1, n2;

printf("Enter two integers: ");

scanf("%d %d",&n1,&n2);

n1 = ( n1 > 0) ? n1 : -n1;

n2 = ( n2 > 0) ? n2 : -n2;

printf("HCF of %d and %d: %d",n1,n2,hcf(n1,n2));

return 0;

}

Output:Graphical user interface, application

Description automatically generated

1. [Write a C program to find LCM of two numbers using recursion](https://codeforwin.org/2016/03/c-program-to-find-lcm-of-two-numbers-using-recursion.html).

Source Code:

#include <stdio.h>

int lcm(int a, int b)

{

static int c = 1;

if (c % a == 0 && c % b == 0)

{

return c;

}

c++;

lcm(a, b);

return c;

}

int main()

{

int n1, n2;

printf("Enter two integers: ");

scanf("%d %d",&n1,&n2);

printf("LCM of %d and %d: %d",n1,n2,lcm(n1,n2));

return 0;

}

Output:

Graphical user interface, text

Description automatically generated