Assignment - 13 A Job Ready Bootcamp in C++, DSA and IOT

1. Write a recursive function to calculate sum of first N natural numbers

#include<stdio.h>

int sumn(int n,int sum);

int main()

{

int n,sum=0;

printf("Enter a Number:\n");

scanf("%d",&n);

printf("%d",sumn(n,sum));

printf("\n");

return 0;

}

int sumn(int n,int sum)

{

if(n>0)

{

sum=sum+n;

sumn(n-1,sum);

}

else

return sum;

}

2. Write a recursive function to calculate sum of first N odd natural numbers

#include<stdio.h>

int oddn(int n,int sum);

int main()

{

int n,sum=0;

printf("Enter a number:\n");

scanf("%d",&n);

printf("%d",oddn(n,sum));

printf("\n");

return 0;

}

int oddn(int n,int sum)

{

if(n>0)

{

if(n%2)

sum=sum+n;

oddn(n-1,sum);

}

else

return sum;

}

3. Write a recursive function to calculate sum of first N odd natural numbers

#include<stdio.h>

int se(int n,int sum);

int main()

{

int n,sum=0;

printf("Enter a number:\n");

scanf("%d",&n);

printf("%d",se(n,sum));

printf("\n");

return 0;

}

int se(int n,int sum)

{

if(n>0)

{

if(n%2==0)

sum=sum+n;

se(n-1,sum);

}

else

return sum ;

}

4. Write a recursive function to calculate sum of squares of first n natural numbers

#include<stdio.h>

int se(int n,int sum);

int main()

{

int n,sum=0;

printf("Enter a number:\n");

scanf("%d",&n);

printf("%d",se(n,sum));

printf("\n");

return 0;

}

int se(int n,int sum)

{

if(n>0)

{

if(n%2==0)

sum=sum+n;

se(n-1,sum);

}

else

return sum;

}

5. Write a recursive function to calculate sum of digits of a given number

#include<stdio.h>

int sd(int n,int sum);

int main()

{

int n,sum=0;

printf("Enter a number:\n");

scanf("%d",&n);

printf("Sum of all digit %d",sd(n,sum));

printf("\n");

return 0;

}

int sd(int n,int sum)

{

int dig;

if(n>0)

{

dig=n%10;

sum=sum+dig;

sd(n/10,sum);

}

else

return sum;

}

6. Write a recursive function to calculate factorial of a given number

#include<stdio.h>

int fac(int n);

int main()

{

int n;

printf("Enter a number:\n");

scanf("%d",&n);

printf("Factorial of %d id %d",n,fac(n));

printf("\n");

return 0;

}

int fac(int n)

{

if(n>0)

{

n=n\*fac(n-1);

}

else

return 1;

}

7. Write a recursive function to calculate HCF of two numbers

#include<stdio.h>

int hcf(int n,int num1,int num2);

int main()

{

int n,num1,num2;

printf("Enter two numbers:\n");

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

if(num1<=num2)

n=num1;

else

n=num2;

printf("HCF of %d & %d is %d",num1,num2,hcf(n,num1,num2));

printf("\n");

return 0;

}

int hcf(int n,int num1,int num2)

{

if(num1%n==0 && num2%n==0)

return n;

else

hcf(n-1,num1,num2);

}

8. Write a recursive function to print first N terms of Fibonacci series

#include<stdio.h>

int fibn(int n);

int main()

{

int n;

printf("Enter a number:\n");

scanf("%d",&n);

printf("%d",fibn(n));

printf("\n");

return 0;

}

int fibn(int n)

{

if(n==1)

return 1;

else

n=n+fibn(n-1);

return n;

}

9. Write a program in C to count the digits of a given number using recursion.

#include<stdio.h>

int count(int n,int c);

int main()

{

int n,c=0;

printf("Enter a number:\n");

scanf("%d",&n);

printf("The number of digit in %d is %d",n,count(n,c));

printf("\n");

return 0;

}

int count(int n,int c)

{

if(n>0)

{

c++;

count(n/10,c);

}

else

return c;

}

10. Write a program in C to calculate the power of any number using recursion.

#include<stdio.h>

int power(int n,int p,int num);

int main()

{

int n,p,num;

printf("Enter a number and followed by it's power\n");

scanf("%d %d",&n,&p);

printf("%d",power(n,p,num=n));

printf("\n");

return 0;

}

int power(int n,int p,int num)

{

if(p>1)

{

n=n\*num;

power(n,p-1,num);

}

else

return n;

}