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

More on Recursion in C Language

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

#include <stdio.h>

int fun(int n)

{

if (n == 1)

return 1;

return n + fun(n - 1);

}

int main()

{

int n;

printf("Enter the value: ");

scanf("%d", &n);

printf("Sum is: %d", fun(n));

return 0;

}

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

#include <stdio.h>

int fun(int n)

{

if (n == 1)

return 1;

return (n\*2-1) + fun(n - 1);

}

int main()

{

int n;

printf("Enter the value: ");

scanf("%d", &n);

printf("Sum is: %d", fun(n));

return 0;

}

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

#include <stdio.h>

int fun(int n)

{

if (n == 1)

return 1;

return (n\*2-1) + fun(n - 1);

}

int main()

{

int n;

printf("Enter the value: ");

scanf("%d", &n);

printf("Sum is: %d", fun(n));

return 0;

}

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

#include <stdio.h>

int fun(int n)

{

if (n == 0)

return 0;

return (n\*n) + fun(n - 1);

}

int main()

{

int n;

printf("Enter the value: ");

scanf("%d", &n);

printf("Sum is: %d", fun(n));

return 0;

}

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

#include <stdio.h>

int fun(int n)

{

if (n == 0)

return 0;

return n%10 + fun(n/10);

}

int main()

{

int n;

printf("Enter the value: ");

scanf("%d", &n);

printf("Sum is: %d", fun(n));

return 0;

}

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

#include <stdio.h>

int fun(int n)

{

if (n == 1)

return 1;

return n \* fun(n-1);

}

int main()

{

int n;

printf("Enter the value: ");

scanf("%d", &n);

printf("Sum is: %d", fun(n));

return 0;

}

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

#include <stdio.h>

int hcf(int a, int b)

{

if (a == b)

return a;

else if (a % b == 0)

return b;

else if (b % a == 0)

return a;

if (a > b)

return gcd(a % b, b);

else

return gcd(a, b % a);

}

int main()

{

int x, y;

printf("Enter two number: ");

scanf("%d%d", &x, &y);

printf("hcf is: %d", hcf(x, y));

return 0;

}

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

#include <stdio.h>

int Fibonacci(int n)

{

if (n == 0)

return 0;

else if (n == 1)

return 1;

else

return (Fibonacci(n - 1) + Fibonacci(n - 2));

}

int main()

{

int n, i = 0, c;

scanf("%d", &n);

printf("Fibonacci series - ");

for (c = 1; c <= n; c++)

{

printf("%d ", Fibonacci(i));

i++;

}

return 0;

}

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

#include <stdio.h>

int fun(int n)

{

int ct=0;

if (n == 0)

return 0;

ct++;

return ct + fun(n/10);

}

int main()

{

int n;

printf("Enter the value: ");

scanf("%d", &n);

printf("count is: %d", fun(n));

return 0;

}

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

#include <stdio.h>

int fun(int n,int p)

{

if (p == 0)

return 1;

return n \* fun(n,p-1);

}

int main()

{

int n,power;

printf("Enter the value and it's power: ");

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

printf("power is: %d", fun(n,power));

return 0;

}