CSE 115L: Programming Language I Lab (Section: 06)

Spring 2020

Lab-10(Recursion)

Recursion: Recursion is the process of repeating items in a self-similar way. In programming languages, if a program allows you to call a function inside the same function, then it is called a recursive call of the function.

```
#include <stdio.h>
#include <string.h>

int Series(int);
int main(void)
{
        int x = 10;
        printf("%d", Series(x));
        return 0;
}


int Series(int n)
{
        if(n == 1)
        return 1; //base case
        else
        return (n + Series(n-1)); //recursive
case

}
```

What happens after the first function call?

Series(10)
10 + Series(9)
10 + 9 + Series(8)
10 + 9 + 8 + Series(7)
…….. …….. ……..
10 + 9 +…….+ 3 + 2 + Series(1)
So the base case occurs here
10 + 9 +…….+ 3 + 2 + 1

Calculating factorial

Non-Recursive Method	**Recursive Method**

#include <stdio.h>
 	
int factorial(int x);
 	
int main()
{
int a,fact;
printf("Enter a number:");
scanf("%d",&a);
fact=factorial(a);
printf("Factorial value= %d", fact);
return 0;
}
 	
int factorial(int x)
{
int f=1,i;
 	
for(i=x; i>=1; i--)
{
f=f*i;
}
 	
return f;
}
	#include<stdio.h>
	
	int factorial(int x);
	
	int main(void)
	{
	int a,fact;
	printf("Enter a number:");
	scanf("%d",&a);
	fact=factorial(a);
	printf("Factorial value= %d \n",fact);
	return 0;
	}
	
	int factorial(int x)
	{
	if(x==1)
	return 1;//terminating or base case
	return 1;
	else
	return x*factorial(x-1);
	}