

Recursion:- In C, it is possible for the functions to call themselves. A fun is called recursive if a statement within the body of a function calls the same function.

⊗ Also known as a circular definition.

⊗ Recursion is thus the process of defining something in terms of itself.

eg:- Write a program to find factorial of a no. using recursion.

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

```
void main()
```

```
{
    int a, fact;
```

```
    printf("enter any no");
```

```
    scanf("%d", &a);
```

```
    fact = rec(a);
```

```
    printf("fact = %d", fact);
```

```
}
```

```
int rec(int n) = 5
```

```
{
    int f;
```

```
    if(x==1)
```

```
        return(1);
```

```
    else
```

```
        f = x * rec(x-1);
```

```
        return(f);
```

```
}
```

⊗ $5 * \text{rec}(4);$

$5 * 4 * \text{rec}(3);$

$5 * 4 * 3 * \text{rec}(2);$

$5 * 4 * 3 * 2 * \text{rec}(1);$

$5 * 4 * 3 * 2 * 1$

= 120

scope rule of function: The scope of variable determines over what region of the program a variable is actually available for use.

Recursion:-

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64/5

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* $5 * \text{rec}(4)$

$5 * 4 * \text{rec}(3)$;

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$5 * 4 * 3 * 2 * 1$

= 120

Scope rule of function: The scope of variable determines over what region of the program a variable is actually available for use.

the scope of a global variable is the entire program, whereas the scope of a local variable begins at the point of declaration and ends at the end of the function.

passing array to a function:- like the value of simple variables, it is also possible to pass the value of an array to a function. To pass a 1-D array to a called function, it is sufficient to list the name of the array, without any subscript. e.g.

```
void main() // call by value
{
    int i;
    int marks[] = {55, 65, 75, 56};
    for (i=0; i<=3; i++)
        display(marks[i]);
}

void display (int m)
{
    printf("%d", m);
}
```

call by reference

```
→ display(&marks[i]);
}
void display (int *h)
{
    printf("%d", *h);
}
```

~~L-24~~ ^{Saturday} L-25, 26/10/10

Structure and union in C:-

Defining a structure:- structure is a collection of heterogeneous data type or a mechanism for packing data of different types.

* A structure contains a no. of data-types grouped together. These data types may or may not be of the same type.

The general format of a structure def. is given as:-