C-104 ⇒ Types of Recursion - Part 1

Direct and Indirect Recursion

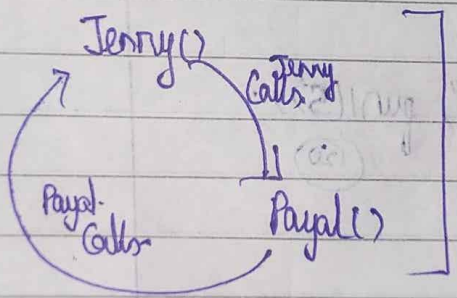
* If a function calls itself directly then it is directly recursion.

Eg:

```
fun1()
{
  ....
  fun1();
}
```

→ Direct Recursion.

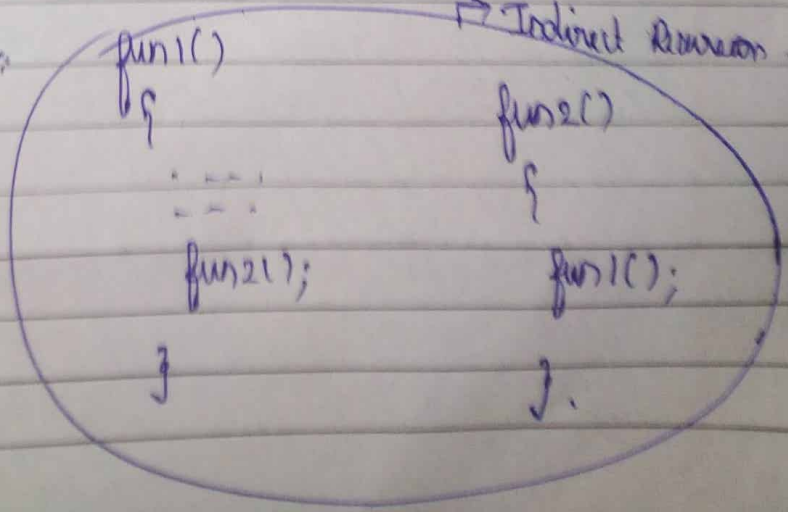
* If a function calls itself indirectly then it is called indirect recursion.



→ Indirect recursion.

If a function calls itself indirectly i.e. in a circular motion then it is called indirect recursion.

Eg:



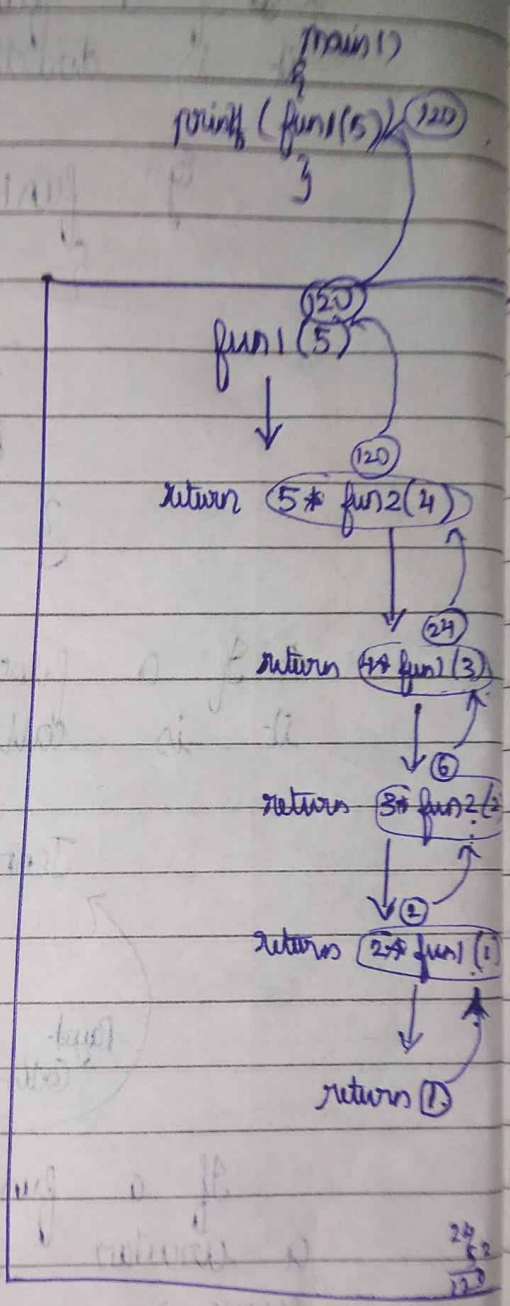
→ Indirect Recursion.

fun1 calls itself but it calls through fun2 (1) indirectly.

Program: (Factorial of a number using Indirect recursion)

```
int fun1(int n)
{
  if(n==1)
    return 1;
  else
    return n*fun2(n-1);
}
int fun2(int n)
{
  if(n==1)
    return 1;
  else
    return n*fun1(n-1);
}
void main()
{
  printf("%d", fun1(5));
}
```

(120)



o/p

120

```c
#include <stdio.h>
#include <stdlib.h>
/** 1-DIRECT INDIRECT RECURSION **/
int fun1(int n)
{
 if(n==1)
  return 1;
 else
  {
   int s;
   s=n*fun2(n-1);
 return s;
  }
}
int fun2(int n)
{
 if(n==1)
  return 1;
 else
 {
  int s;
  s=n*fun1(n-1);
  return s;
 }
}
int main()
{
    int n=5;
```

```c
}
int main()
{
    int n=5;
    fun1(n);
    printf("Factorial is %d",fun1(n));
    getch();
}
```

```
"D:\1. C C++NOTEBOOK\C LANGUAGE\C PROGRAMS\PART 5_Jennys Lectures\PART 7_JENNYS LECTURE_FUNCTIONS\FUN
Factorial is 120
```