What is Recursion?

Get introduced to the concept of recursion.

> **We'll cover the following** ⌃
>
> - Introduction to recursion
>   - Example program

Introduction to recursion#

Suppose you are standing in a line to buy a movie ticket. You want to know the price of the ticket, but only the first person in line knows the price.

You can approach the first person and ask him the price directly. However, if you leave the line, someone else will take your place. Therefore, you will have to use the following approach.

- You will ask for the ticket price from the person in front of you.

- That person does not want to leave the line either. Therefore, they will ask the same question from the person in front of them. This process will continue until the price is asked from the first person in the line.

- The first person in line will tell the ticket price. After that, each person in line will know the ticket price through the person standing in front of them.

How can we translate this problem into code? Here, **recursion** comes in.

The first person asking for the price of a ticket from the person in front of them is like calling some function inside another function body. The person asking the same question from a person in front of them is like calling the same function in its own body but with different arguments.

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*A function that calls itself repeatedly until some condition is met is known as a **recursive function**. The process whereby a function repeatedly calls itself until a condition is met is known as recursion.*
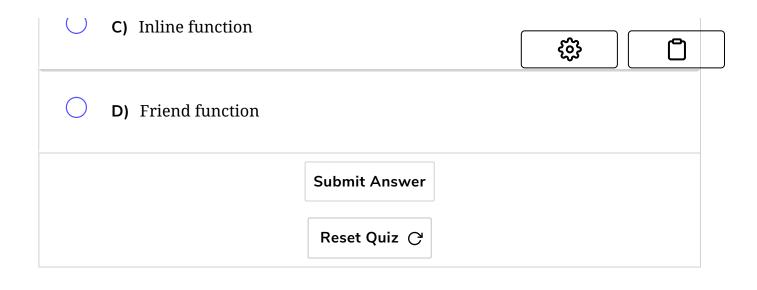

Example program#

To solve the ticket problem we just discussed in C++, we will write a function `ticket_price` that will keep calling itself in its own body until we encounter the first person in a line.

Run the code below and see the output!

📝The value of a `person` cannot be negative.

```cpp
1  #include <iostream>
2
3  using namespace std;
4
5  int ticket_price(int person) {
6    int price;
7    if (person == 1) {
8      price = 100;
9      return price;
```

```cpp
10      }
11      else
12        person--;
13      return ticket_price(person);
14   }
15
16   int main() {
17      int price;
18      price = ticket_price(5);
19      cout << "Ticket price = " << price << endl;
20
21   }
```

(/learn)

Output   0.99s

 Ticket price = 100

Quiz

Q   A function that calls itself in its own body is known as:

○   **A)** Super function

Your Answer

✔   **B)** Recursive function

C) Inline function

⚙️ 📋

D) Friend function

Submit Answer

Reset Quiz ↻

In the upcoming lesson, let's learn about the recursive function in C++ in detail.

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Quiz

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Structure of a Recursive Program

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