What is Recursion?

In this lesson, we will be introduced to the concept of recursion.

We'll cover the following

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 the 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 use another 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 from the person standing in front of them and then tell the same price to the person standing in line behind 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. Such a function is known as a **recursive function**.

If the function calls itself again and again until some

condition is met, then such a function is known as a ***recursive function****. This process is known as* ***recursion****.*

Example program

To solve the problem given above 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.

```
#include <iostream>

using namespace std;

int ticket_price(int person) {
  int price;
  if (person == 1) {
    price = 100;
    return price;
  }
  else
    person--;
  return ticket_price(person);
}

int main() {
  int price;
  price = ticket_price(5);
  cout << "Ticket price = " << price << endl;

}
```

Quiz

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

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

Retake Quiz

In the upcoming lesson, let's get into the details of the recursive function in C++.