- Solution

In this lesson, we'll discuss the solution to the exercise from the previous lesson.

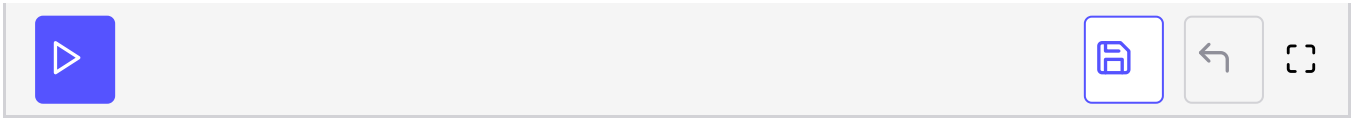
WE'LL COVER THE FOLLOWING

Solution

The function `executeDivision` displays the result of the calculation or exception.

```
// promiseFutureException.cpp

#include <exception>
#include <future>
#include <iostream>
#include <thread>
#include <utility>

struct Div{
  void operator()(std::promise<int>&& intPromise, int a, int b){
    try{
      if ( b==0 ){
          std::string errMess = std::string("Illegal division by zero: ") +
                                std::to_string(a) + "/" + std::to_string(b);
          throw std::runtime_error(errMess);
      }
      intPromise.set_value(a/b);
    }
    catch (...){
      intPromise.set_exception(std::current_exception());
    }
  }
};

void executeDivision(int nom, int denom){
  std::promise<int> divPromise;
  std::future<int> divResult= divPromise.get_future();

  Div div;
  std::thread divThread(div,std::move(divPromise), nom, denom);
```

```
  // get the result or the exception
  try{
    std::cout << nom << "/" << denom << " = " << divResult.get() << std::endl;
  }
  catch (std::runtime_error& e){
    std::cout << e.what() << std::endl;
  }

  divThread.join();
}

int main(){

  std::cout << std::endl;

  executeDivision(20, 0);
  executeDivision(20, 10);

  std::cout << std::endl;

}
```



Explanation

The promise deals with the issue of the denominator being 0. If the denominator is 0, it sets the exception as return value: `intPromise.set_exception(std::current_exception())` in line 20. Following that, the future has to deal with the exception in its try-catch block (lines 33 - 38).

If possible, use tasks as a safe replacement of condition variables.

In the next lesson, we'll learn how to return a notification while using `std::promise` and `std::future` in C++ for multithreading.