C++ (ENGLISH)

1. forduló

Google

A kategória támogatója: Google

Ismertető a feladatlaphoz

Please make sure you read the instructions below before starting the worksheet:

ALL questions have a correct answer.

There is NO question where all the answers are correct, if you do tick all the answers, you will automatically score 0 points for that question.

If there is more than one answer choice, marking an incorrect answer will result in a minus mark.

Questions with a radio button have one correct answer.

If the time limit for the task sheet expires, the system will AUTOMATICALLY submit the task sheet with the answers marked.

We recommend that you do NOT start the worksheets with attachments on your mobile phone, as this will be pointed out before the worksheets concerned.

The data-request exercises will NOT be marked out of the total, only the multiple-choice exercises.

Rankings will be shown after the 4th round, in percentage form: you will be in the top 20-40-60% in a given category.

If you open the same questionnaire from several browsers, several windows or several devices at the same time, we cannot be held responsible for any anomalies that may occur in the data saving!

The use of ChatGPT is not prohibited, but we do NOT accept comments referring to it!

Any questionnaire solved in a noticeably short time will be disqualified, in any other suspicious case we reserve the right to invalidate the round!

We wish you a good competition!

This round consists of algorithmic problems. Before the timer starts, please prepare your favorite C++ IDE (C++ version 17 or above is recommended). The input will be provided in a downloadable include file (less than 100KB), and you will also find a solution code template.

You are allowed to use any content that you own or find on the internet that was published before the start of the round. However, any other form of assistance is prohibited.

Indítás utáni csatolmányok

1. feladat 10 pont

Forest count

Count the forests on a field! These fields are rectangular fields where the grass is marked with 0 and the trees are marked with 1. A forest is a set of at least two horizontally or vertically adjacent trees. Examples:

2 individual trees:

```
0 1 0
1 0 0
0 0 0
```

1 forest with 3 trees and 1 individual tree:

```
0 1 0
1 1 0
0 0 1
```

Inputs are field_XS_by_YS.cpp.inc files. They contain the horizontal size of the field (XS), the vertical size of the field (YS) and the values of the field line continuously. For example a field_4_by_3.cpp.inc file can look like this:

```
size_t const XS = 4, YS = 3;
size_t const N = 12;
size_t field[] = {
```

```
0, 1, 0, 0
0, 1, 0, 1
0, 1, 1, 0
};
```

You can use a field_XS_by_YS.cpp.inc file like:

```
#include <iostream>
#include "field_XS_by_YS.cpp.inc"

/* MISSING CODE */

int main(){
  size_t forest_count = 0;
  /* MISSING_CODE */
  std::cout << forest_count << std::endl;
  return 0;
}
```

What is the output for field_10_by_10.cpp.inc?

*Note: During this assignment you need to walk on an array that is allocated line-continuously. Calculate offset from x and y with: y * XS + x. Calculate x from offset with offset % xs, y from offset using offset / XS.*

Also note that in the following solution we are not presenting production grade code, but one that is sufficient for competitions, mostly optimized for typing time.

Válasz

2. feladat 10 pont

What is the output for field_80_by_25.cpp.inc?

Válasz

3. feladat 10 pont

What is the output for field_1024_by_768.cpp.inc?

Válasz

Megoldások beküldése