MAC0499 - Trabalho de Formatura Supervisionado

Aplicação web para organizar o estudo para programação competitiva

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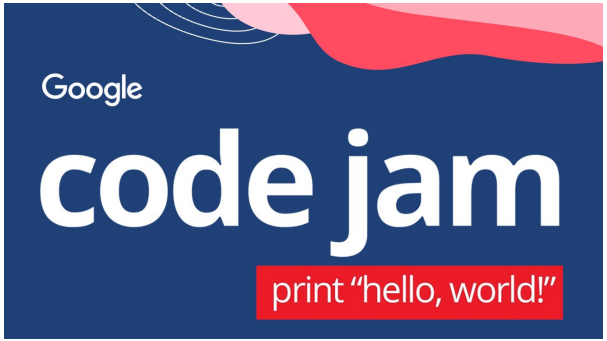
Supervisor: Carlos Eduardo Ferreira

1. Programação competitiva
2. Codeforces
3. Motivação
4. Arquitetura da aplicação
5. Aplicação desenvolvida
6. Considerações finais

Programação competitiva

Principais competições

Competições online



Plataformas de estudo

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HOME TOP CATALOG CONTESTS GYM PROBLEMSET GROUPS RATING EDU API CALENDAR HELP

Codeforces Round #837 (Div. 2)

By _HossamYehia_, history, 21 hour(s) ago,

Hello, Codeforces!

I am glad to invite everyone to participate in Codeforces Round #837 (Div. 2) , which will be held on Sunday, December 11, 2022 at 12:35[UTC-3]

The round will be **rated for participants of Division 2 with a rating lower than 2100**. Division 1 participants can participate unofficially in the round.

You will be given 6 problems and 2 hours to solve them. This round was prepared by me and 4qqqq.

I'd especially like to thank:

- Aleks5d for awesome coordination of our round.

→ Pay attention

Before contest
Codeforces Round #837 (Div. 2)
3 days

→ gustavo_m32

Rating: 1698
Contribution: 0

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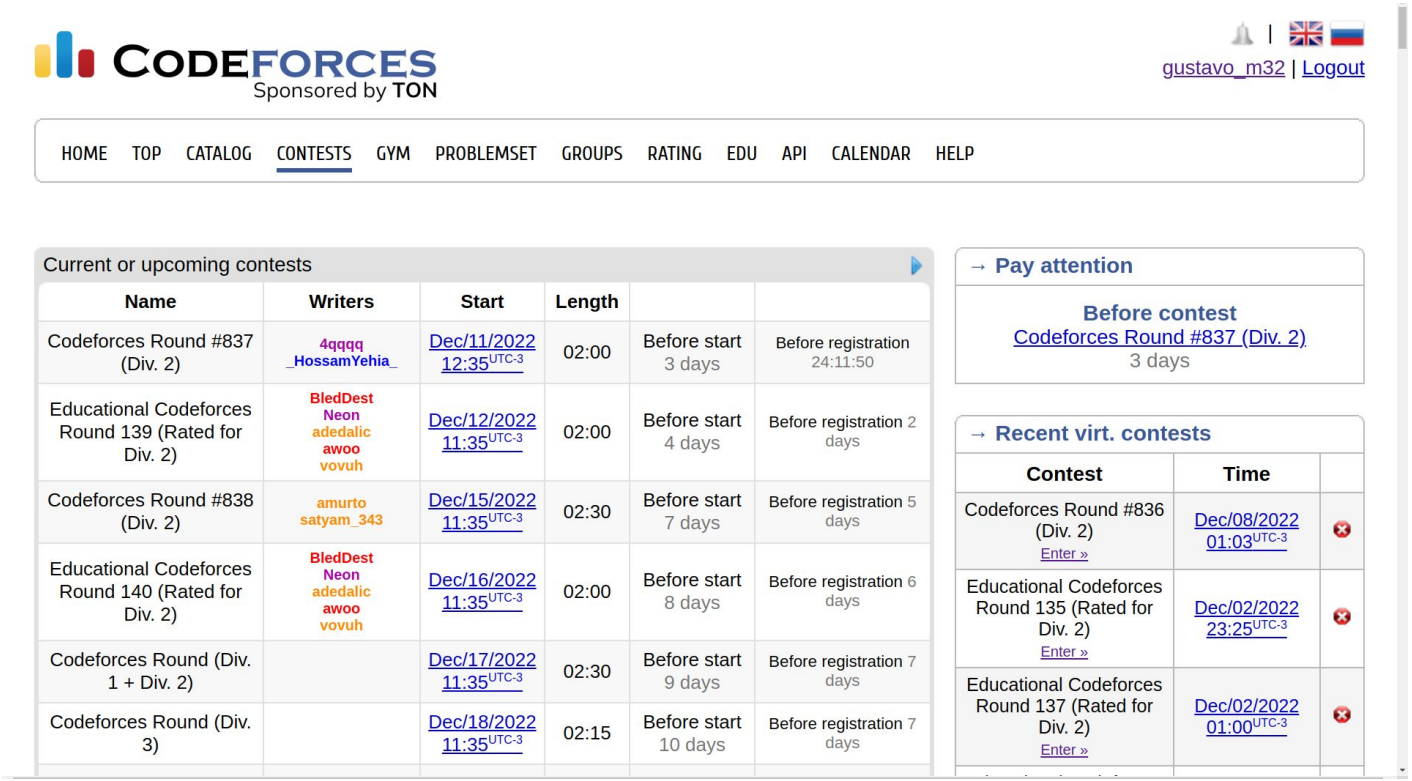
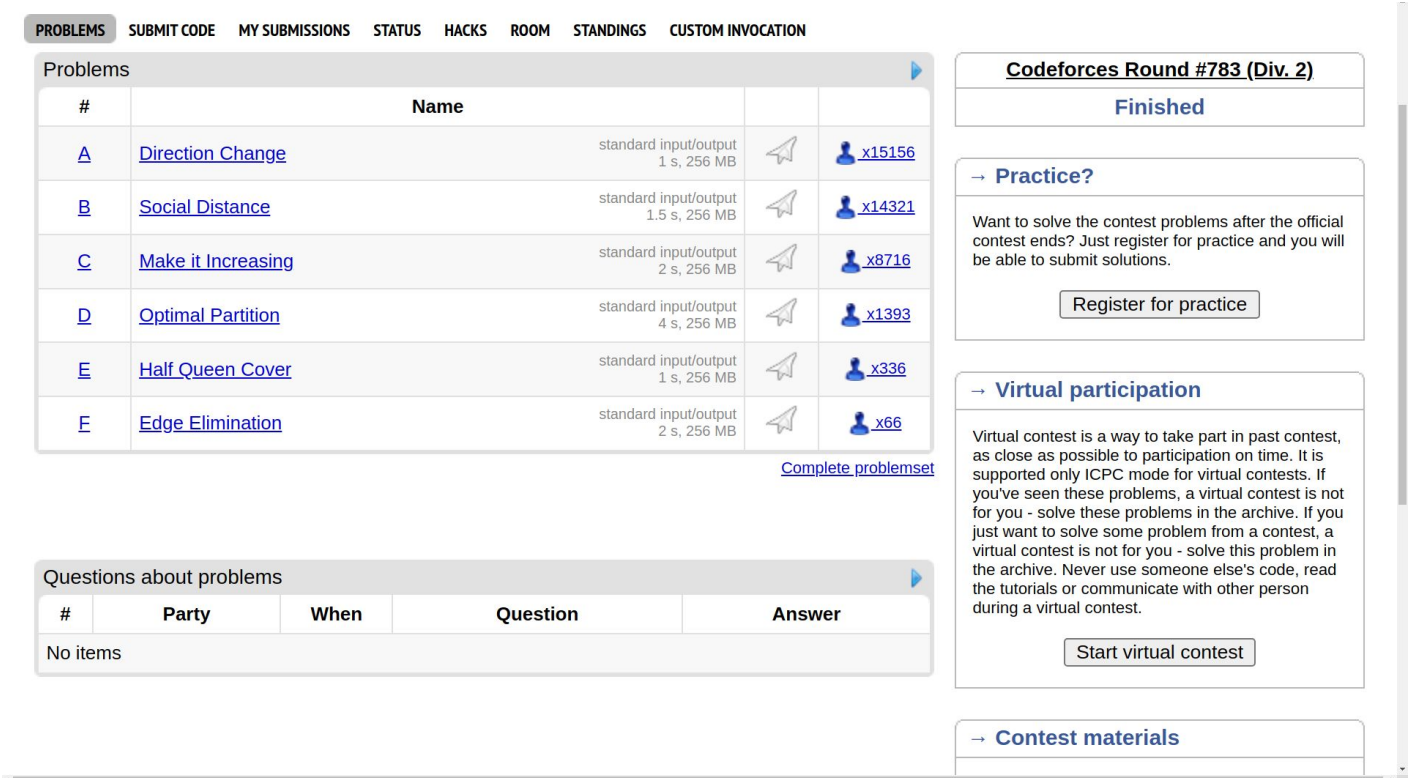
- Contests

gustavo_m32

Competições internas



Problemas de uma competição



PROBLEMS | SUBMIT CODE | MY SUBMISSIONS | STATUS | HACKS | ROOM | STANDINGS | CUSTOM INVOCATION

Problems

#	Name			
A	Direction Change	standard input/output 1 s, 256 MB		x15156
B	Social Distance	standard input/output 1.5 s, 256 MB		x14321
C	Make it Increasing	standard input/output 2 s, 256 MB		x8716
D	Optimal Partition	standard input/output 4 s, 256 MB		x1393
E	Half Queen Cover	standard input/output 1 s, 256 MB		x336
F	Edge Elimination	standard input/output 2 s, 256 MB		x66

Complete problemset

Questions about problems

#	Party	When	Question	Answer
No items				

Codeforces Round #783 (Div. 2)

Finished

→ Practice?

Want to solve the contest problems after the official contest ends? Just register for practice and you will be able to submit solutions.

Register for practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Contest materials

Problema

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

A. Direction Change

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given a grid with n rows and m columns. Rows and columns are numbered from 1 to n, and from 1 to m. The intersection of the a-th row and b-th column is denoted by (a, b).

Initially, you are standing in the top left corner $(1, 1)$. Your goal is to reach the bottom right corner (n, m).

You can move in four directions from (a, b): up to $(a - 1, b)$, down to $(a + 1, b)$, left to $(a, b - 1)$ or right to $(a, b + 1)$.

You cannot move in the same direction in two consecutive moves, and you cannot leave the grid. What is the minimum number of moves to reach (n, m)?

Input

The input consists of multiple test cases. The first line contains a single integer t ($1 \le t \le 10^3$) — the number of the test cases. The description of the test cases follows.

The first line of each test case contains two integers n and m ($1 \le n, m \le 10^9$) — the size of the grid.

Output

For each test case, print a single integer: -1 if it is impossible to reach (n, m) under the given conditions, otherwise the minimum number of moves.

Example

input Copy

```
6
1 1
2 1
1 3
4 2
4 6
10 5
```

output Copy

```
0
1
-1
6
10
17
```

Codeforces Round #783 (Div. 2)
Finished
Practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

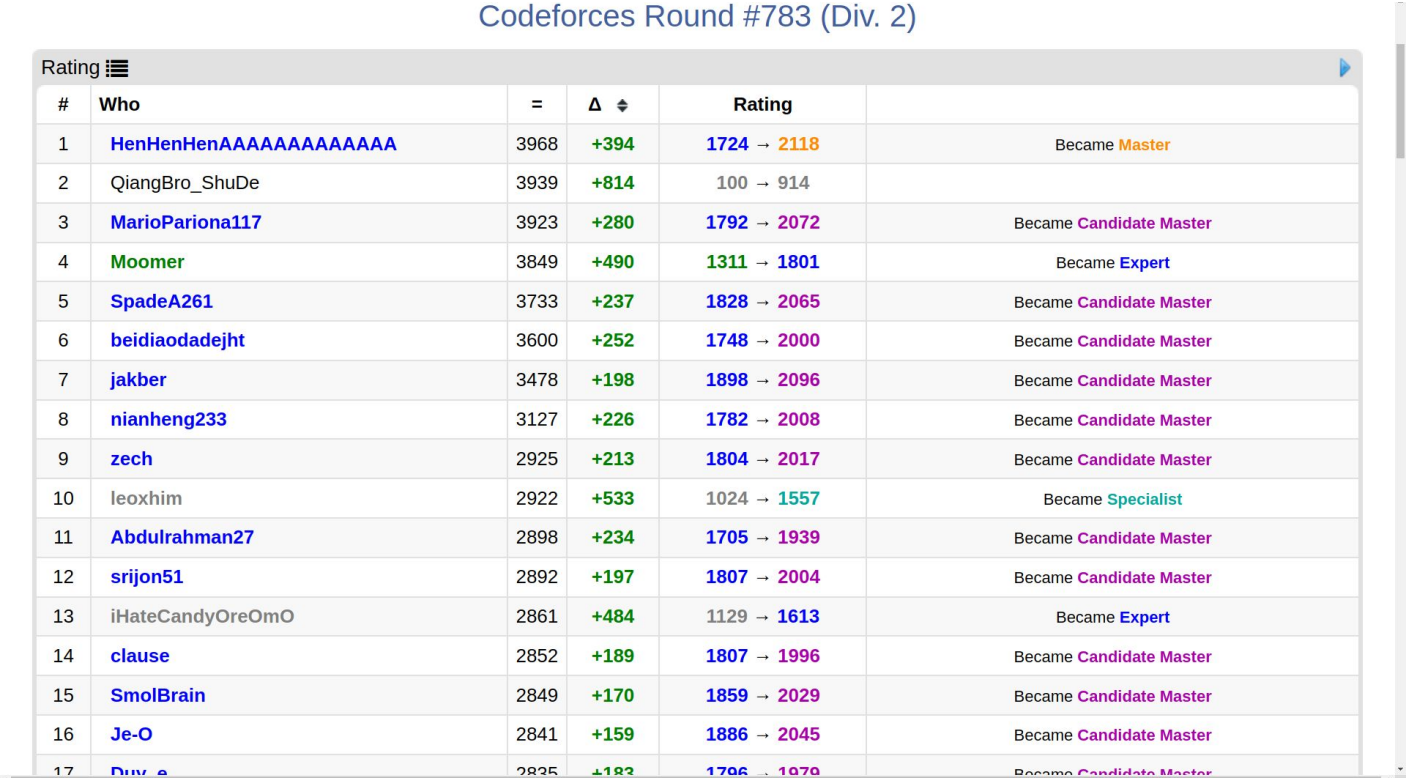
Language: GNU G++20 11.2.0 (64 bit, winlibs)

Choose file: Choose file No file chosen

Submit

→ Last submissions

Sistema de pontuação

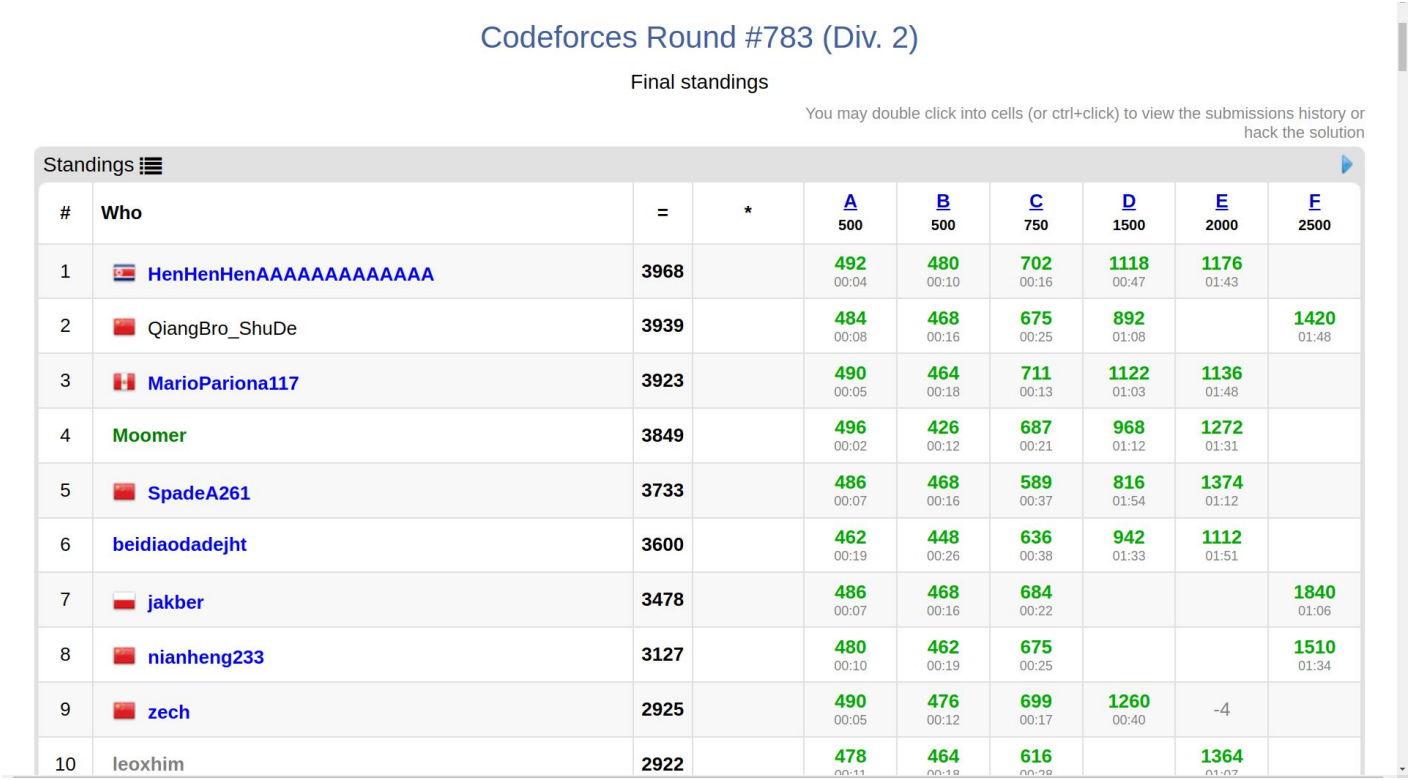


Codeforces Round #783 (Div. 2)

Rating

#	Who	=	Δ	Rating	
1	HenHenHenAAAAAAAAAAAA	3968	+394	1724 → 2118	Became Master
2	QiangBro_ShuDe	3939	+814	100 → 914	
3	MarioPariona117	3923	+280	1792 → 2072	Became Candidate Master
4	Moomer	3849	+490	1311 → 1801	Became Expert
5	SpadeA261	3733	+237	1828 → 2065	Became Candidate Master
6	beidiaodadejht	3600	+252	1748 → 2000	Became Candidate Master
7	jakber	3478	+198	1898 → 2096	Became Candidate Master
8	nianheng233	3127	+226	1782 → 2008	Became Candidate Master
9	zech	2925	+213	1804 → 2017	Became Candidate Master
10	leoxhim	2922	+533	1024 → 1557	Became Specialist
11	Abdulrahman27	2898	+234	1705 → 1939	Became Candidate Master
12	srijon51	2892	+197	1807 → 2004	Became Candidate Master
13	iHateCandyOreOmO	2861	+484	1129 → 1613	Became Expert
14	clause	2852	+189	1807 → 1996	Became Candidate Master
15	SmolBrain	2849	+170	1859 → 2029	Became Candidate Master
16	Je-O	2841	+159	1886 → 2045	Became Candidate Master
17	Duy_e	2835	+183	1796 → 1979	Became Candidate Master

Resultado de uma competição



Codeforces Round #783 (Div. 2)

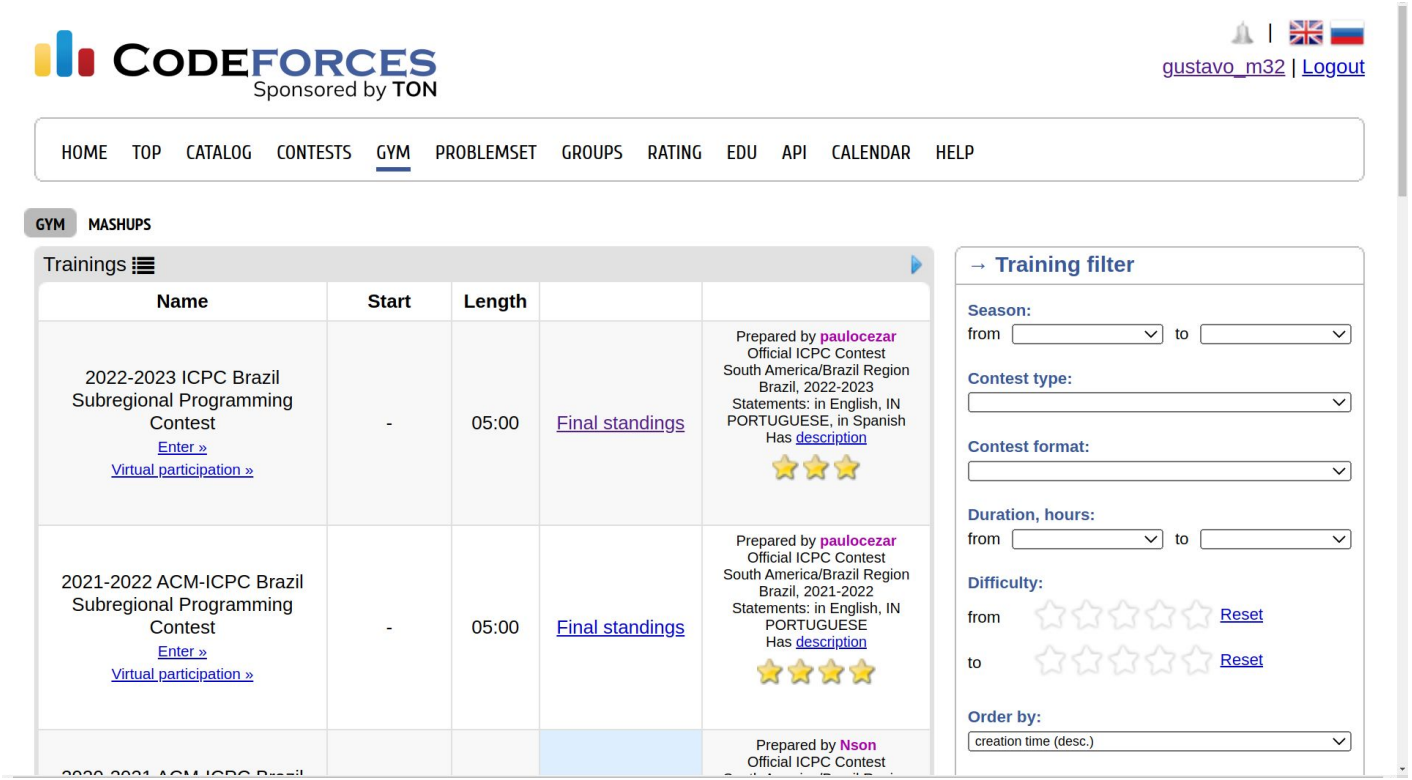
Final standings

You may double click into cells (or ctrl+click) to view the submissions history or hack the solution

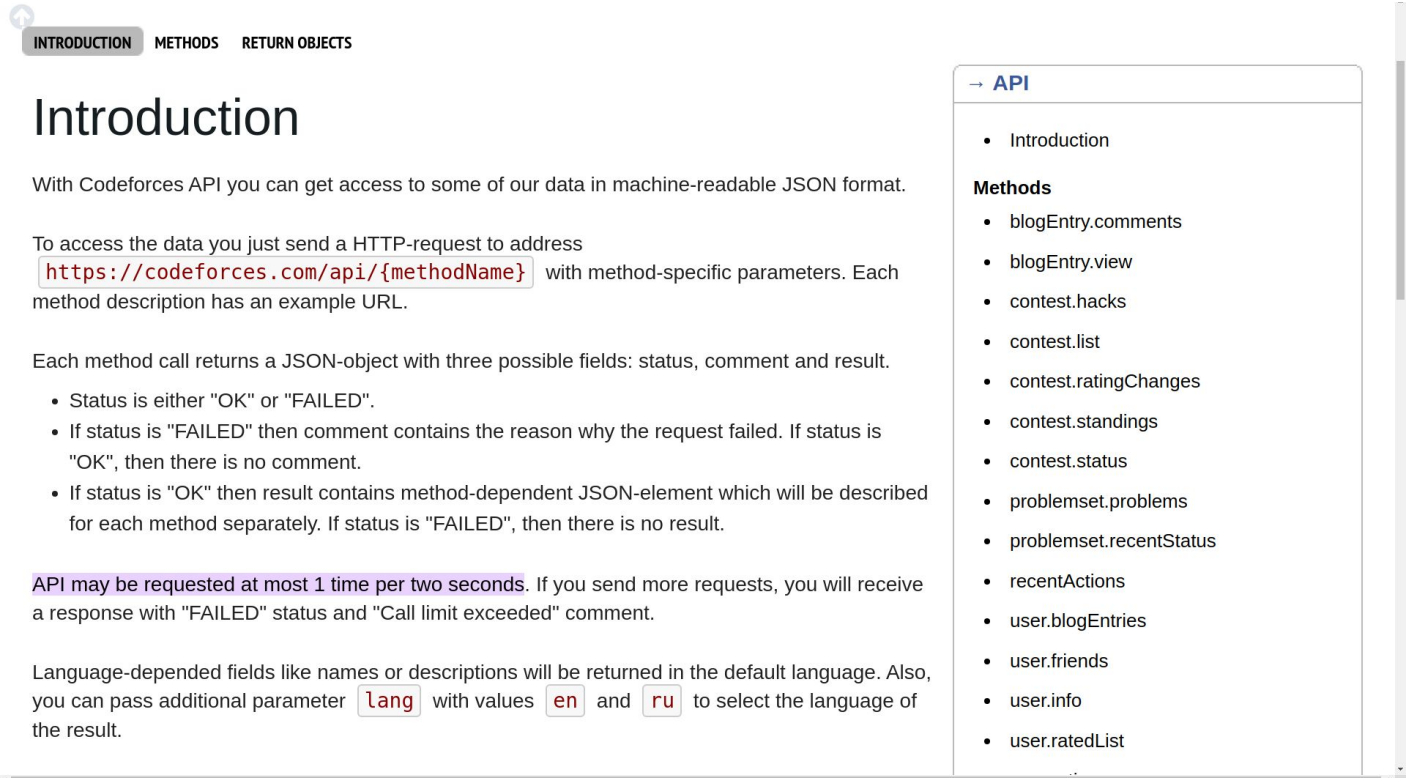
Standings

#	Who	=	*	A 500	B 500	C 750	D 1500	E 2000	F 2500
1	HenHenHenAAAAAAAAAAAA	3968		492 00:04	480 00:10	702 00:16	1118 00:47	1176 01:43	
2	QiangBro_ShuDe	3939		484 00:08	468 00:16	675 00:25	892 01:08		1420 01:48
3	MarioPariona117	3923		490 00:05	464 00:18	711 00:13	1122 01:03	1136 01:48	
4	Moomer	3849		496 00:02	426 00:12	687 00:21	968 01:12	1272 01:31	
5	SpadeA261	3733		486 00:07	468 00:16	589 00:37	816 01:54	1374 01:12	
6	beidiaodadejht	3600		462 00:19	448 00:26	636 00:38	942 01:33	1112 01:51	
7	jakber	3478		486 00:07	468 00:16	684 00:22			1840 01:06
8	nianheng233	3127		480 00:10	462 00:19	675 00:25			1510 01:34
9	zech	2925		490 00:05	476 00:12	699 00:17	1260 00:40	-4	
10	leoxhim	2922		478	464	616		1364	

Competições da Gym



API



INTRODUCTION METHODS RETURN OBJECTS

Introduction

With Codeforces API you can get access to some of our data in machine-readable JSON format.

To access the data you just send a HTTP-request to address `https://codeforces.com/api/{methodName}` with method-specific parameters. Each method description has an example URL.

Each method call returns a JSON-object with three possible fields: status, comment and result.

- Status is either "OK" or "FAILED".
- If status is "FAILED" then comment contains the reason why the request failed. If status is "OK", then there is no comment.
- If status is "OK" then result contains method-dependent JSON-element which will be described for each method separately. If status is "FAILED", then there is no result.

API may be requested at most 1 time per two seconds. If you send more requests, you will receive a response with "FAILED" status and "Call limit exceeded" comment.

Language-depended fields like names or descriptions will be returned in the default language. Also, you can pass additional parameter `lang` with values `en` and `ru` to select the language of the result.

→ API

- Introduction

Methods

- blogEntry.comments
- blogEntry.view
- contest.hacks
- contest.list
- contest.ratingChanges
- contest.standings
- contest.status
- problemset.problems
- problemset.recentStatus
- recentActions
- user.blogEntries
- user.friends
- user.info
- user.ratedList

Motivação

Planilhas e programas em Python

	A	B	C	D	E	F	G
1	Problema	S	M	O que faltou	Descrição	O que fazer para melhorar	E
16	1543D1	AC	W	XOR	Eu conseguiria fazer mais rápido se estivesse bem definidas as propriedades do XOR	Estudar bem as propriedades do XOR	E
17	1543D2	AC	T	XOR	Problema usou uma versão geral de XOR para qualquer base numérica	Estudar conversão de base de números	E
18	1479B1	AC	E	Greedy	Fiz o guloso errado	Estudar guloso	
19	1270D	AC	W	Atenção	Só errei uma variável	Ser mais metódico na criação de variáveis	
20	1268A	AC	W	Atenção	No loop reverso eu esqueci de colocar i-- ao invés de i++	Ter mais atenção/Procurar outra forma de fazer um for reverso	
21	1546C	AC	W	Atenção	Printei na ordem errada	Aprender a ler melhor o enunciado	
22	1546D	AC	T	Binômio de Newton	Faltou saber generalizar o binômio de newton	Estudar propriedades do binômio de newton	
23	1527B2	AC	T	Jogos	Faltou mais habilidade sobre jogos entre duas pessoas	Estudar jogos	
24	1506F	AC	W	Atenção	Faltou uma parte do raciocínio pra resolver o problema	Aprender a ler melhor o enunciado	

	A	B	C	D	E	F	G	H	I
1	trees								
2	0								
3	graphs	Steiner trees	OK	Euler path	P				
4	5	4	https://docs.google.com/	1	https://docs.google.com/				
5	strings	Suffix Automata	OK	Aho-Corasick	F				
6	6	4	https://cp-algorithms.com/	2	https://docs.google.com/				
7	geometry	Shamos-Hoey	OK	Delaunay/Voronoi	F				
8	7	5	https://docs.google.com/	2	https://docs.google.com/				
9	flows	Truculencia 1.0	OK	Truculencia 2.0 - min cost flow	P	Truculencia 2.0 - hungaro	OK	Latam Regional 2019 - problema A	OK
10	17	8	https://docs.google.com/	2	https://docs.google.com/	6	https://docs.google.com/	1	https://codeforces.com/g
11	2-sat	Truculencia 1.0	P						
12	0	0	https://docs.google.com/						
13									

```
gustavo@nitrobuck:~/Dropbox/Maratona/Codeforces/data$ python3 selectGym.py
/home/gustavo/.local/lib/python3.8/site-packages/requests/__init__.py:89: RequestsDependencyWarning: urllib
3 (1.26.9) or chardet (3.0.4) doesn't match a supported version!
  warnings.warn("urllib3 ({}) or chardet ({}) doesn't match a supported "
Digite parte do nome: ICPC
Got 'contest.list?gym=true' from cache!
Got 'user.status?handle=gustavo_m32' from cache!
gustavo_m32: 326
fetching (1) 'https://codeforces.com/api/user.status?handle=Byakko'... Success!
Byakko: 442
fetching (1) 'https://codeforces.com/api/user.status?handle=nathan_luiz'... Success!
nathan_luiz: 666
union: 969
fetching (1) 'https://codeforces.com/api/contest.standings?contestId=102862&from=1&count=1'... Success!
fetching (1) 'https://codeforces.com/api/contest.standings?contestId=102279&from=1&count=1'... Success!
fetching (1) 'https://codeforces.com/api/contest.standings?contestId=104018&from=1&count=1'... Success!
(***  )  05:00  2004-2005 ACM-ICPC East Central North America Regional Contest (ECNA 2004)
(***  )  05:00  2008-2009 ACM-ICPC, NEERC, Northern Subregional Contest
(***  )  05:00  2009-2010 ACM ICPC Southwestern European Regional Programming Contest (SWERC 2009)
(***  )  05:00  2010-2011 ACM-ICPC, NEERC, Northern Subregional Contest
(***  )  05:00  2012, Samara SAU ACM ICPC Quarterfinal Qualification Contest
(***  )  05:00  2013 KTU ACM ICPC Qualification Round
(***  )  05:00  2013, Samara SAU ACM ICPC Quarterfinal Qualification Contest
(***  )  05:00  2013-2014 CT S01E10: 2013 ACM-ICPC Egyptian Collegiate Programming Contest (ECPC 2013)
(***  )  05:00  2014 KTU ACM ICPC Qualification Round
(***  )  05:00  2014, Samara SAU ACM ICPC Quarterfinal Qualification Contest
(***  )  05:00  2015, Samara SAU ACM ICPC Quarterfinal Qualification Contest
```

Estratégias

Leitura do editorial

Codeforces Round #834 (Div. 3) Editorial

By **Vladosiya**, history, 3 weeks ago, translation,

1759A - Yes-Yes?

Idea: **MikeMirzayanov**

Tutorial

1759A - Yes-Yes?

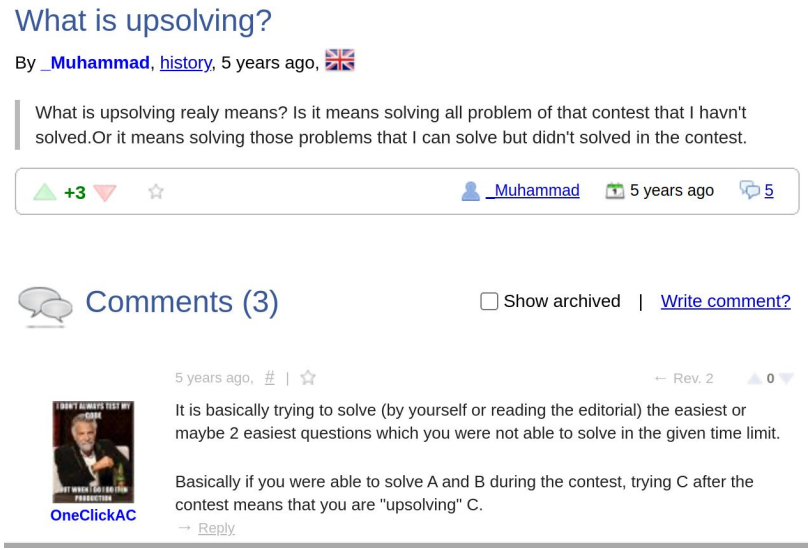
Note that it is enough to consider the string $full$ =YesYes...Yes, where Yes is
substring s has size $|s| \leq 50$.

Then we just use the built-in function $find$ to find out if our string s is a substring of t

Solution

```
full = 'Yes' * 18
t = int(input())
for _ in range(t):
    if full.find(input()) >= 0:
        print('YES')
    else:
        print('NO')
```

Fazer o *upsolving*



What is upsolving?

By **_Muhammad**, history, 5 years ago,

> What is upsolving realy means? Is it means solving all problem of that contest that I havn't solved.Or it means solving those problems that I can solve but didn't solved in the contest.

+3 _Muhammad 5 years ago 5

Comments (3) Show archived | Write comment?

5 years ago, # | ← Rev. 2 0

OneClickAC

It is basically trying to solve (by yourself or reading the editorial) the easiest or maybe 2 easiest questions which you were not able to solve in the given time limit.

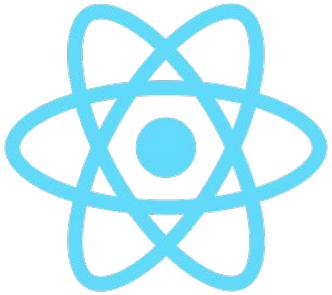
Basically if you were able to solve A and B during the contest, trying C after the contest means that you are "upsolving" C.

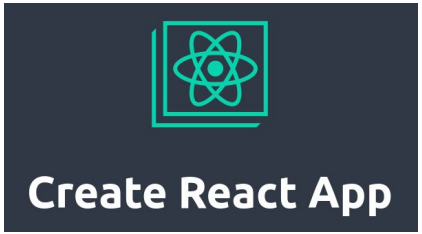
→ Reply

Arquitetura da aplicação

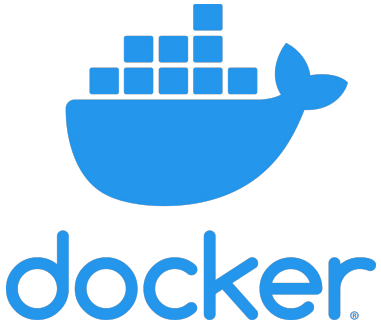
Servidor *(back end)*

Cliente *(front end)*

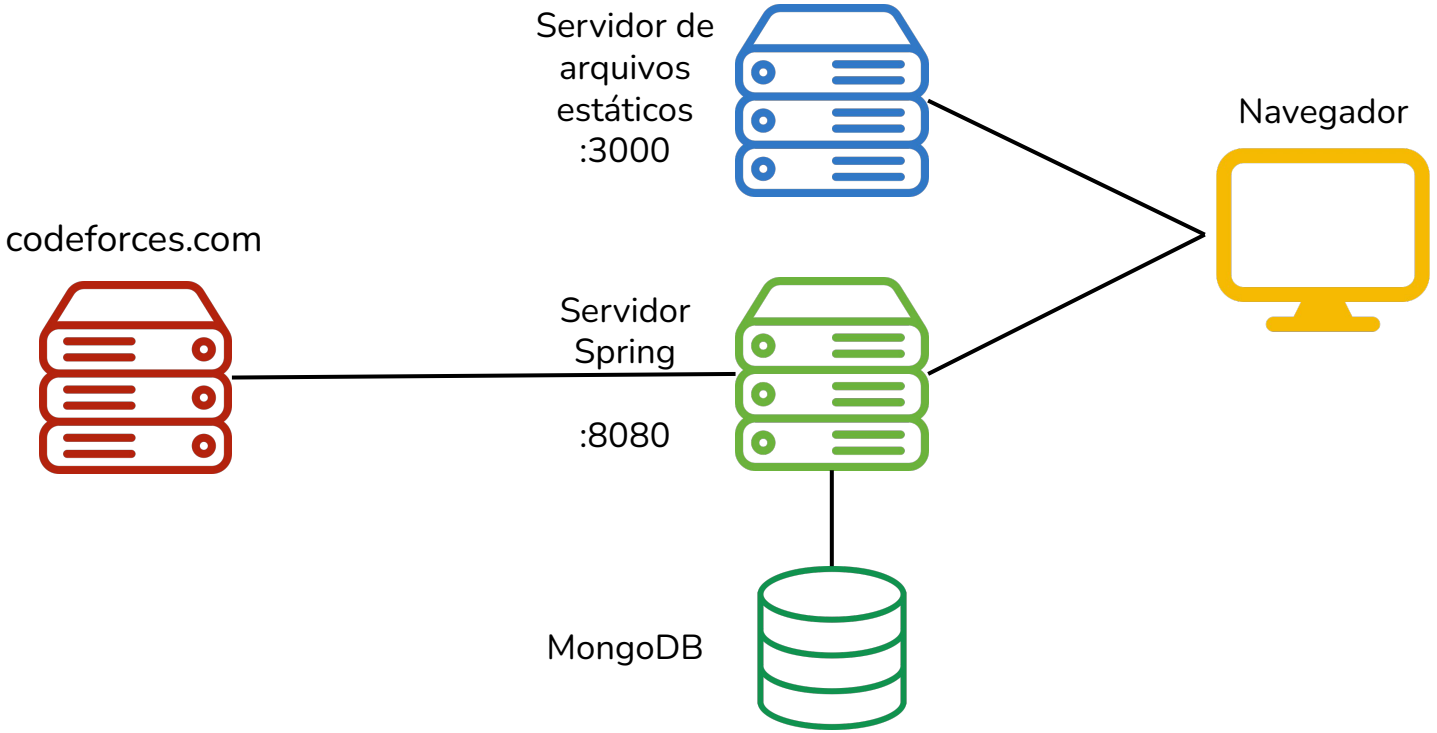




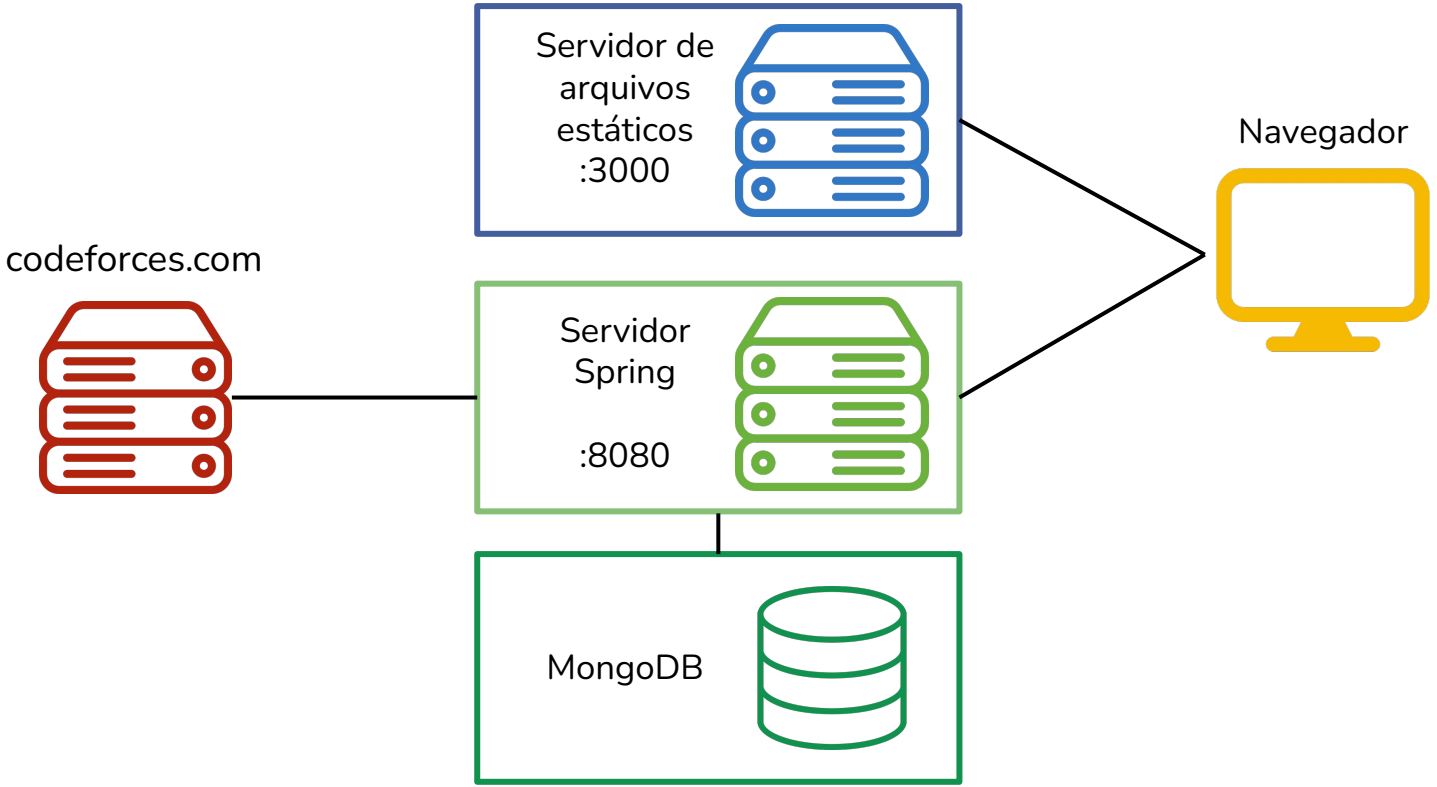
Docker



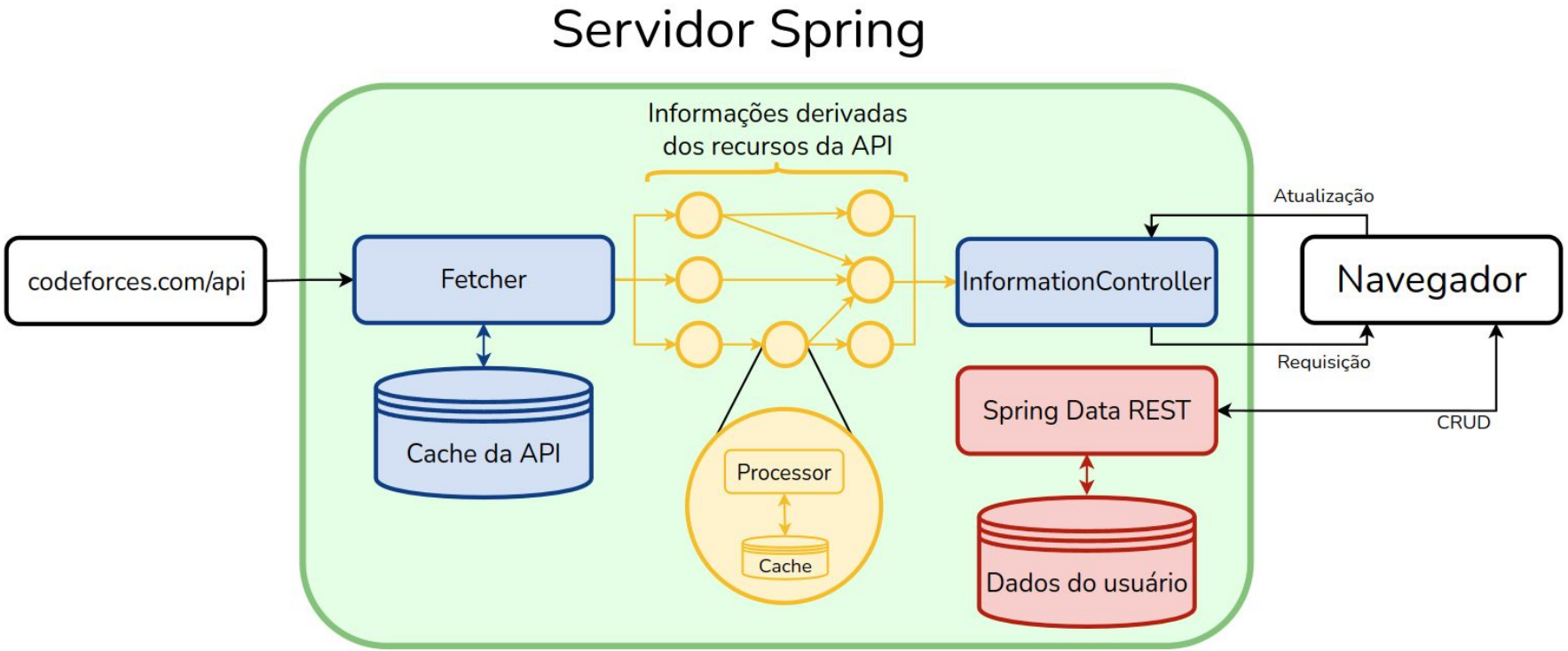
Arquitetura da aplicação



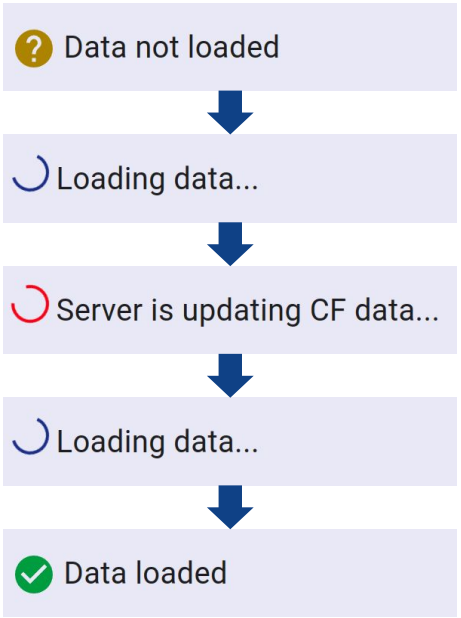
Contêineres do Docker



Arquitetura do servidor principal

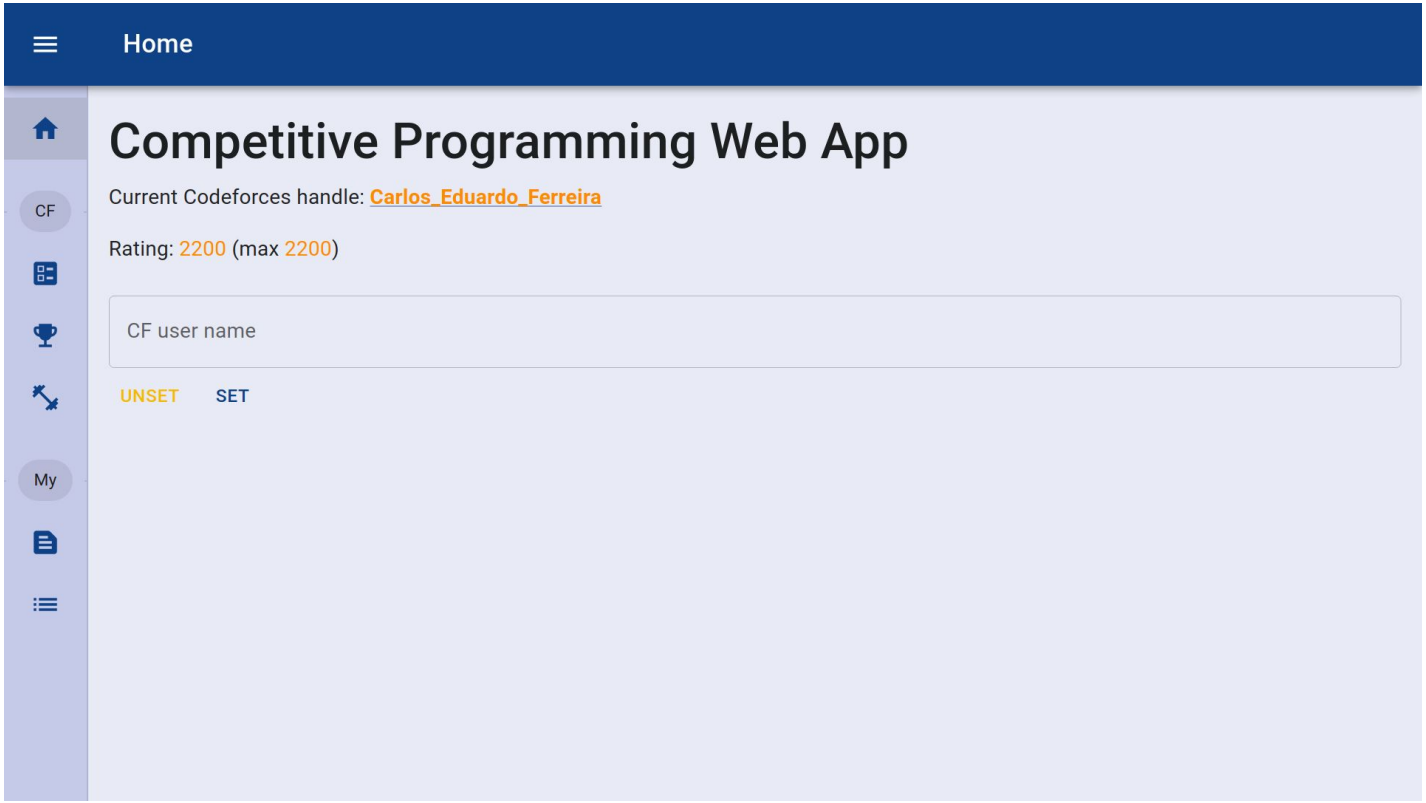


Requisição dos dados pelo cliente

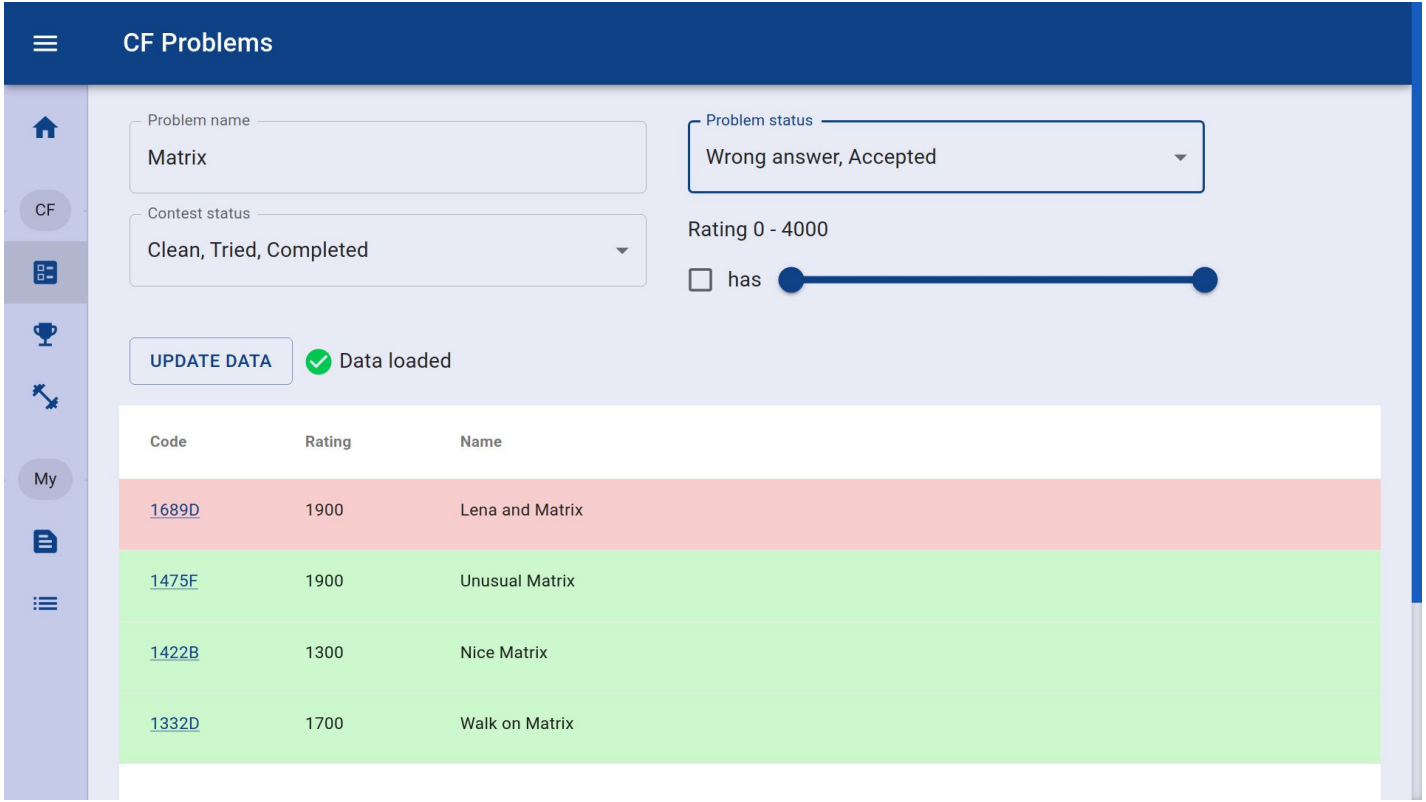


Aplicação desenvolvida

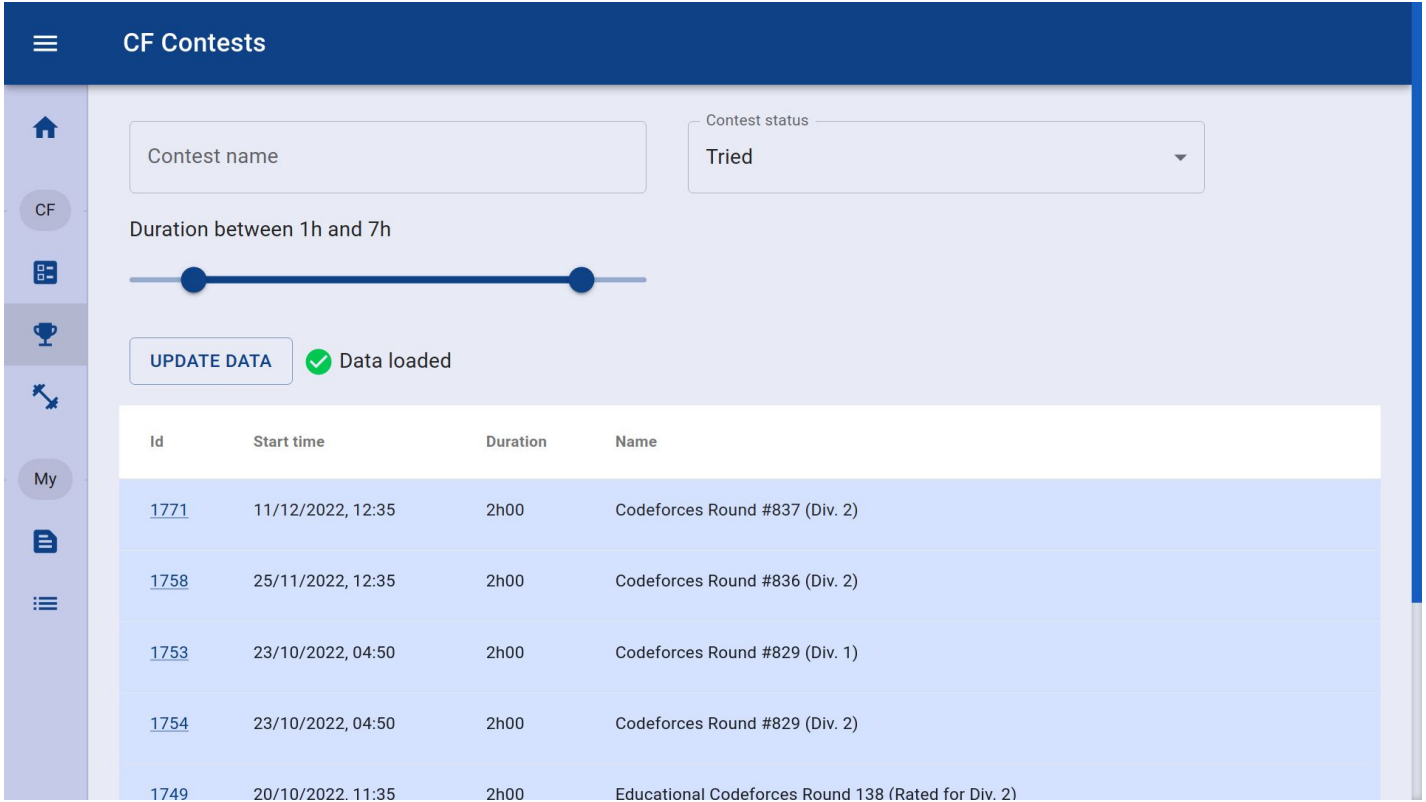
Página inicial



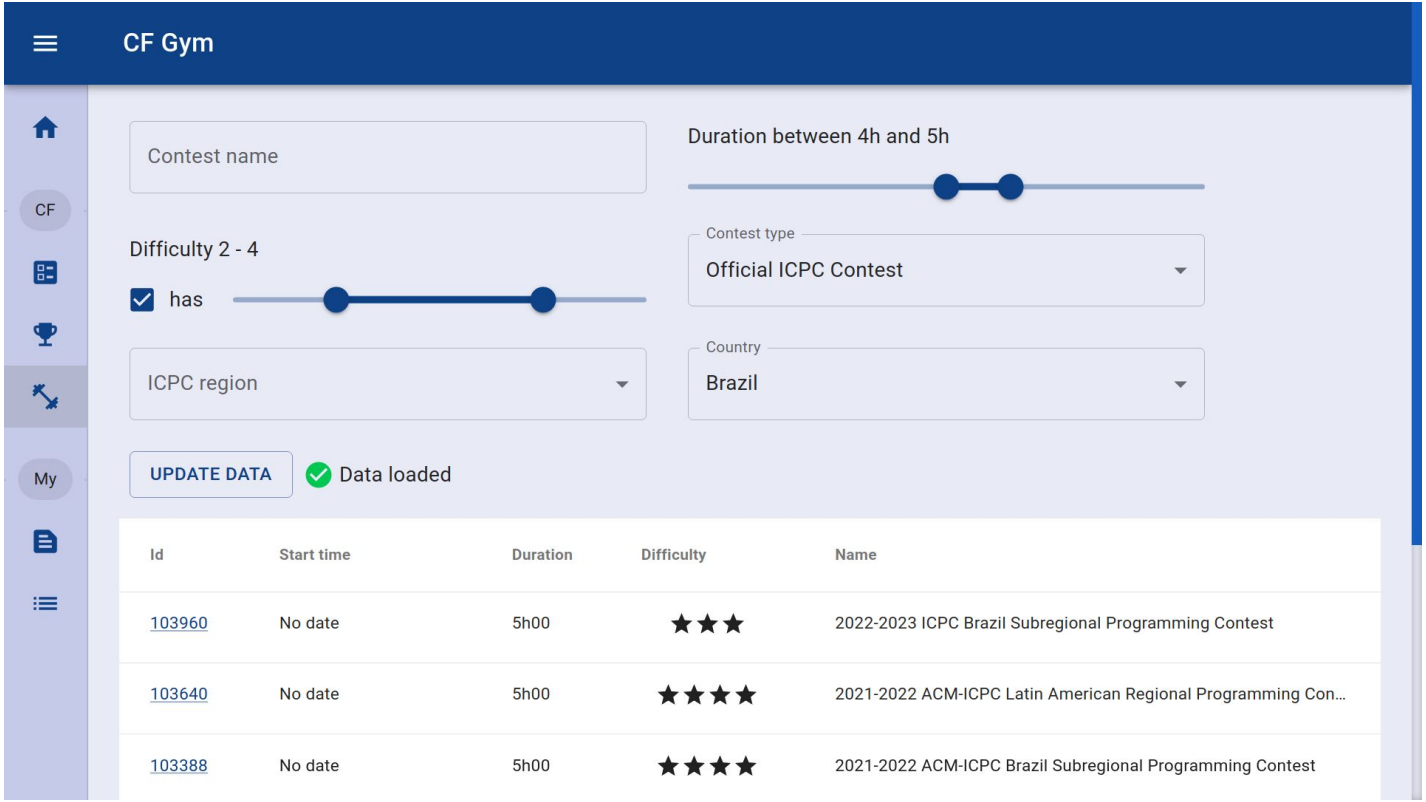
Página de problemas do Codeforces



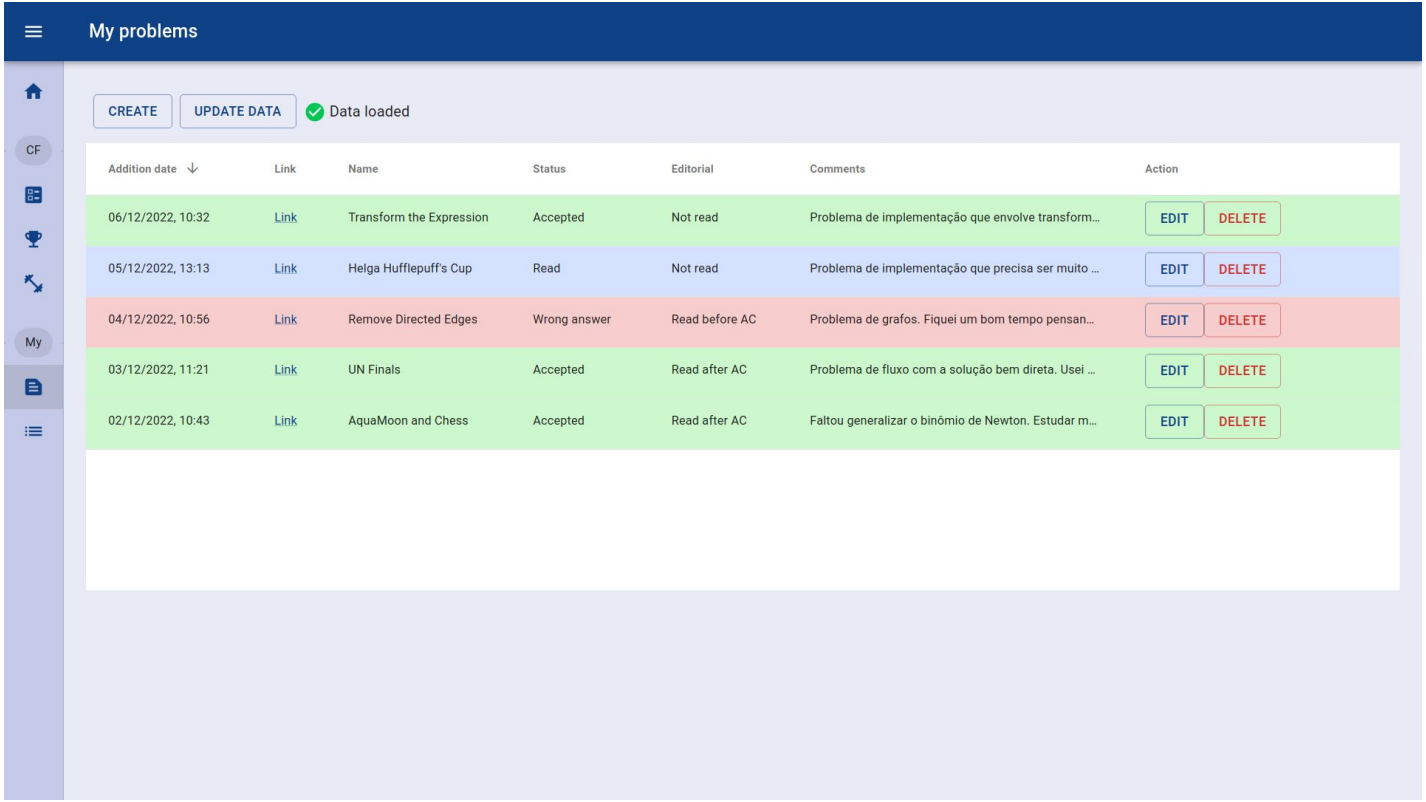
Página de competições internas do Codeforces



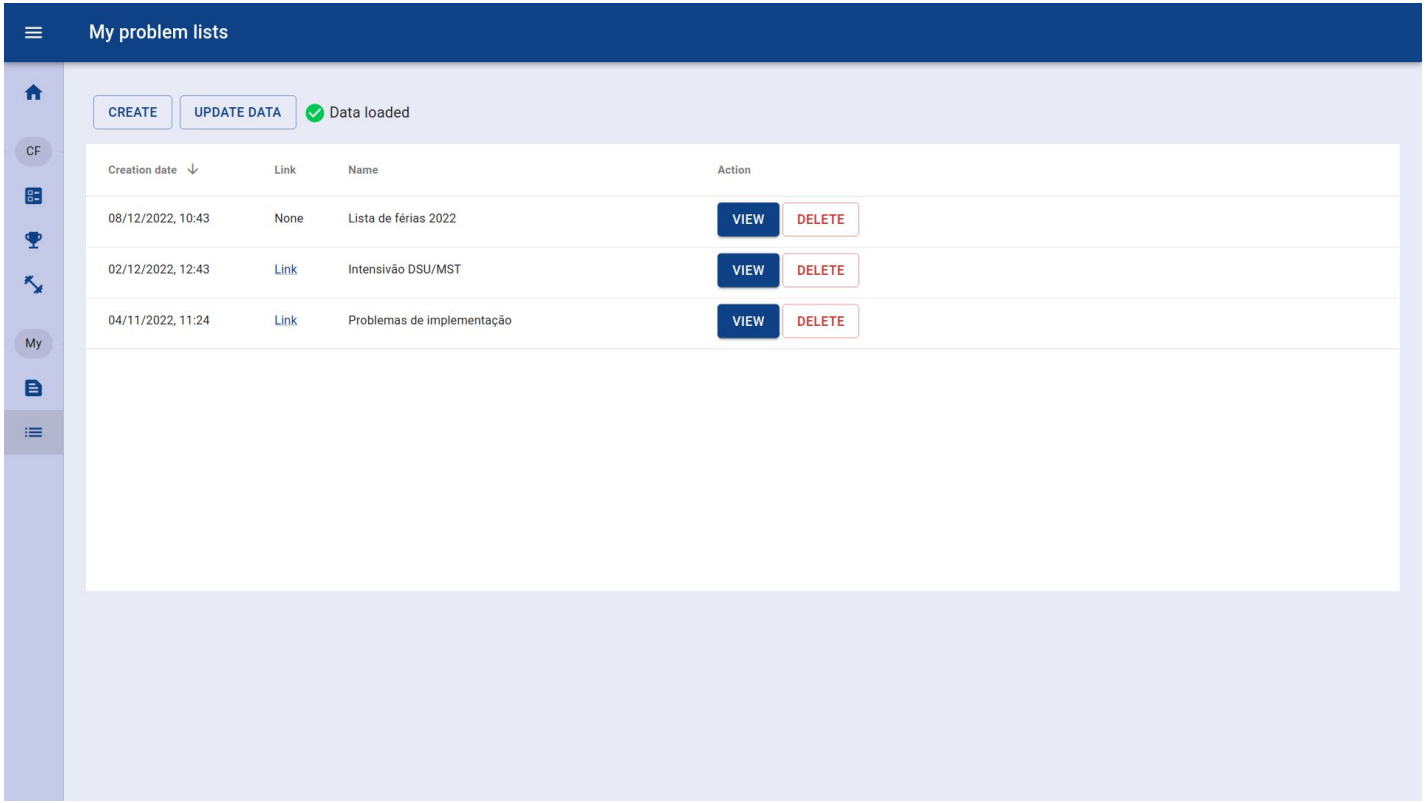
Página de competições da Gym do Codeforces



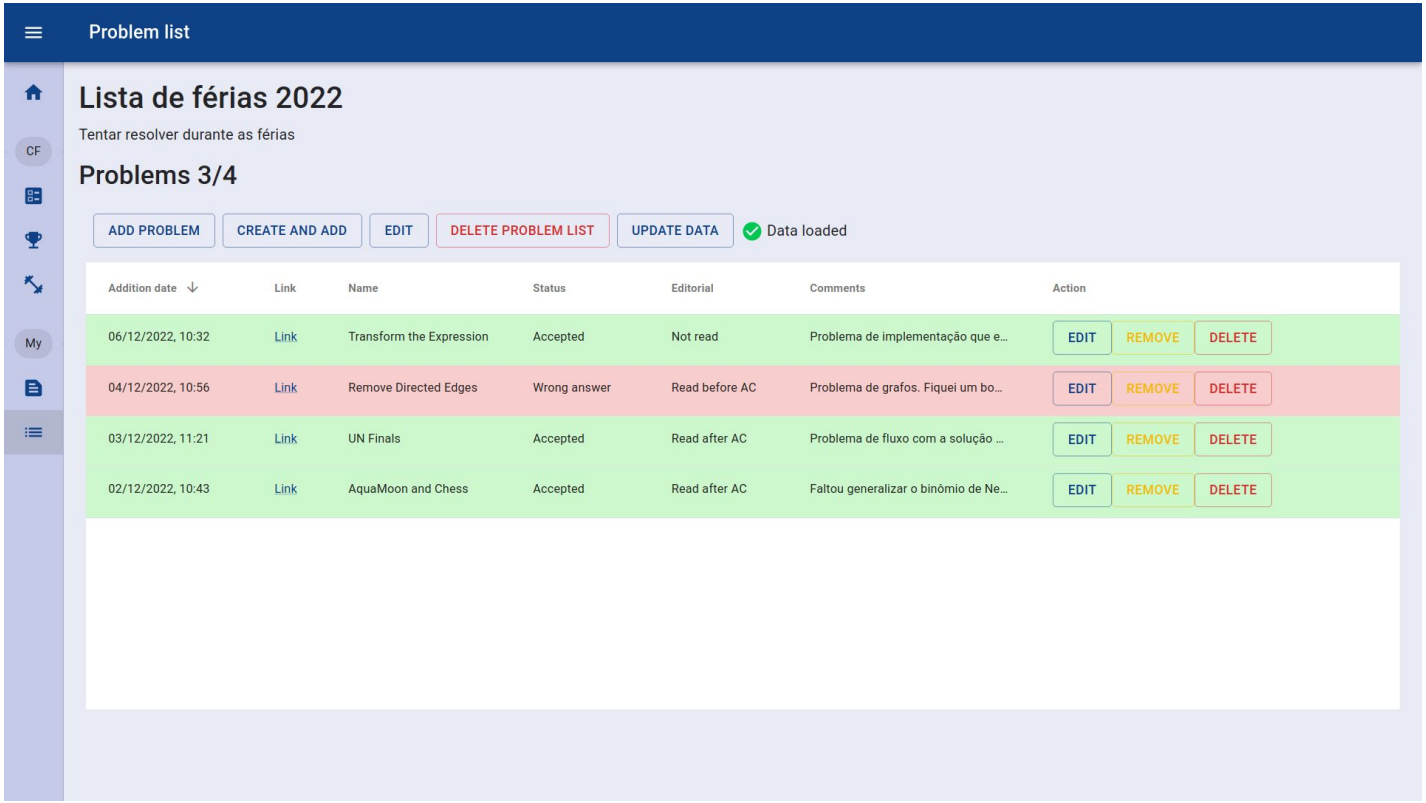
Página de problemas do usuário



Página de listas de problemas do usuário



Página de uma lista de problemas



Considerações finais

Proposta inicial

- ✅ Histórico de problemas
- ✅ Listas de problemas
- ✅ Problemas do *Codeforces*
- ✅ Competições internas do *Codeforces*
- ✅ Competições da *Gym* do *Codeforces*
- ❌ Recomendação de problemas
- ❌ Funcionalidades de time
- ❌ Estatísticas

Agradecimentos

Carlinhos

João Francisco Daniel

maraton USP

Perguntas?

Obrigado!

Balloons icons created by Iconic Panda - Flaticon

Referências

- Ícones do *Flaticon* (https://www.flaticon.com/icons)
- *Codeforces* (https://codeforces.com)
- *API* do *Codeforces* (https://codeforces.com/apiHelp)
- *ICPC* (https://icpc.global)
- Maratona SBC de Programação (http://maratona.sbc.org.br)