

Triviador

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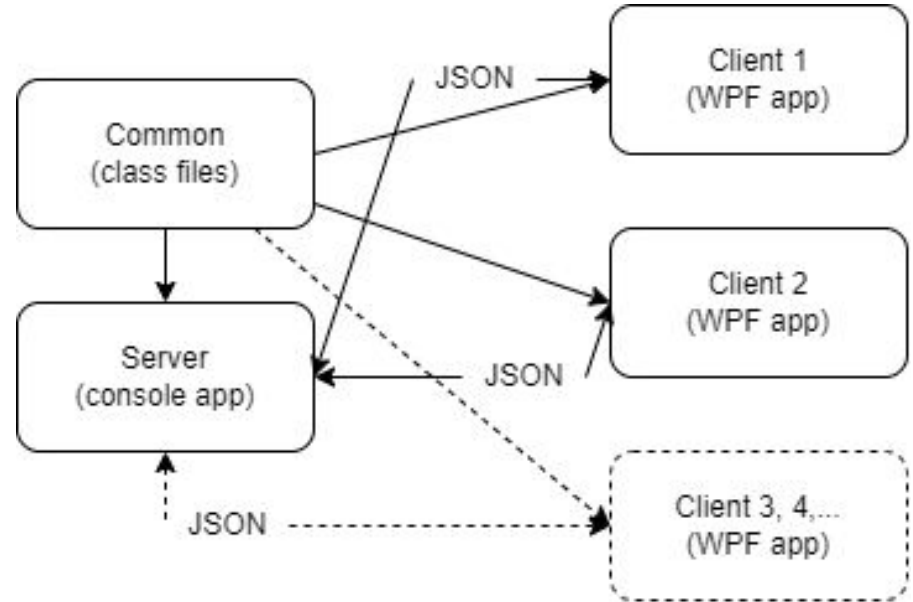
<https://github.com/luk27official/triviador>

Base game idea

- knowledge-based game
- 14 regions, map of Czechia
- two phases
 - region occupation
 - fight
- winner decided by destroying the enemy base region or getting more points
- more information in the README file

Architecture

- 3 projects
 - server
 - common
 - client
- common
 - files shared by both server and client
 - contains class files, format definitions...
- server
 - console application
 - contains questions in JSON format
- client (extensible)
 - WPF application
 - several windows for interaction
- communication between the server and clients also via JSON messages



Common

- **Constants.cs**
 - as the name implies, the contains all of constants, including messages sent to the server/client, timeouts, region settings etc.
 - those settings may be modified to change the game flow
- **GameInformation.cs**
 - contains a class which holds all of the game information, used by both server and client → points, regions, base regions and HP for each of the clients
- **JsonFormats.cs**
 - contains definitions for the JSON communication between the server and clients, as well as a definition for the questions' format
- **MessageController.cs**
 - makes sure that every message is received and read correctly

Server

- waits for both clients to connect, sends corresponding messages in a JSON format
- after both players connect, an instruction to show the game window is sent
- server knows when to receive messages, updates its own game information or sends other instructions based on the type of the message
- method Play() controls the game, the developer may edit it to change the number of rounds etc.
- should be extensible - currently some of the functions have to be modified to add more clients, but this applies to the GUI client design as well...

Server message example

- JSON prefixed by length of the message
- edited a little
- could be optimized by removing the null values, removing indentation, shortening names...

```
00000424{
  "type": "gameUpdate",
  "playerid": null,
  "region": null,
  "gameinformation": {
    "Points": [2600, 2000],
    "Regions": [[4, 12, 9, 0, 3, 2, 5, 1], [7, 11, 10, 6, 8, 13]],
    "BaseHealts": [3, 3],
    "Bases": [4, 7],
    "HighValueRegions": [1]
  },
  "questionabcd": null,
  "questionnumeric": null,
  "answerdetails": {
    "correct": null,
    "times": [null, null],
    "answers": [null, null]
  }
}
```

Server numeric question examples

```
{  
  "content": "What's the maximum score in a classic bowling game?",  
  "correct": "300"  
},  
{  
  "content": "How many emirates are there in the UAE?",  
  "correct": "7"  
},  
{  
  "content": "How many micrograms of niacine does 1 Monster Energy can contain?",  
  "correct": "43"  
},
```

Server question with options examples

```
{
  "content": "What is the capital of Switzerland?",
  "correct": "Bern",
  "answers": [
    "Bern",
    "Zurich",
    "Geneva",
    "Lucerne"
  ]
},
{
  "content": "Which UNIX command is used for searching in text?",
  "correct": "grep",
  "answers": [
    "grep",
    "ls",
    "sudo",
    "echo"
  ]
},
```


Client

- after filling out the connection information, the client waits for instruction about the start
- then a game window is shown with a specified map and information about points and HP
- the client then exchanges several messages with the server, again based on the message type the client somehow reacts (updates its game information, receives an instruction to pick a region...)
- could be extended for more players as well, but that would include some changes in almost all windows

Client - Main Window

✕ Triviador: Menu

— □ ×

Triviador - Connect to Game

Enter IP:

Port:

Connect

Information about connection will appear here.

Client - Game Window

✕ Triviador: Game

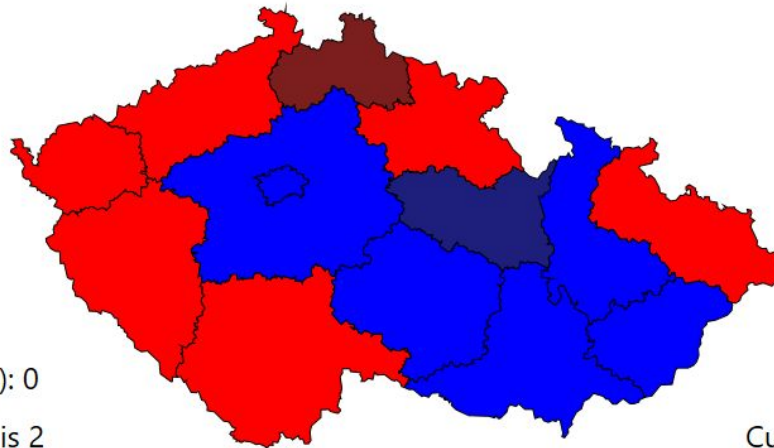
— □ ✕

Player 1 points:

Player 2 points:

Base health:

Base health:



Time left (sec): 0

My player ID is 2

Current round: 3

Region CZJC under attack!

Client - Question Windows

✕ Triviador: Question With Choices



What is the capital of Switzerland?

Zurich

Lucerne

Geneva

Bern

Time left: 0 seconds

✕ Triviador: Numeric Question



At which temperature (in Kelvins) does the critical point of water occur?

Enter your answer:

Send

P1 answer and time: 530, 7008 ms

P2 answer and time: 56, 4420 ms

The right answer was: 647 --> P1 Wins!

Time left: 0 seconds

Possible extensions

- making the game faster - do not wait for time left etc.
- replacing the questions' file for a whole database
- map choosing
- 3 (or more) players game
- AI for singleplayer games
- different rules for a fast/long game
- player chat
- question hints, points system
- login system with a player database