Implementing a Belote Score Tracker

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Outline

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The Belote game

- Belote is a 32-card, 4-player trick-taking game.
- Players 1 and 3 make a team, players 2 and 4 the second one.
- After biding, one team chooses the trump suit and has made the contract.
- The player who wins a trick plays first for the next trick.
- Each trick scores points according to the following table:

Plain suit rank			A	10	K	Q	J	9	8	7
Score	20	14	11	10	4	3	2	0	0	0
Trump suit rank	J	9	A	10	K	Q			8	7

- Other points are awarded (or removed) on some conditions, most of which are evaluated at the end of the game.

Your have to implement a score tracker for Belote

Your program will be given:

- the trump suit;
- which team made the contract;
- which cards are played in each trick.

At the end of each trick, your program will output the current scores, and which player won the trick (and is to play next).

At the end of all 8 tricks, your program will output the final scores.

Your program will read cards on an input stream, and write scores and next player on an output stream

Input:

- Cards are represented by:
  - a suite in `[s, h, d, c]`;
  - a rank in `[A, K, Q, J, T, 9, 8, 7]`.

  E.g. `Td` represents the Ten of Diamonds.
- A trick will be represented as a sequence of cards, in the order they are played, *e.g.* `Tc 8c Td Jc`

Output:

- After each trick, you will print the scores of team 1 and 2, and which player should play next, *e.g.* `65 24 3`
- After the last trick, you will also print the final scores, *e.g.* `162 0`

Any error must be detected and reported on a separate error stream.

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Example

```
s 2
Qh 8h Ah 9h
```

Example

```
s 2
Qh 8h Ah 9h
14 0 3
```

Example

```
s 2
Qh 8h Ah 9h
14 0 3
Kh Th 7h Qs
```

Example

```
s 2
Qh 8h Ah 9h
14 0 3
Kh Th 7h Qs
14 17 2
```

Example

```
s 2
Qh 8h Ah 9h
14 0 3
Kh Th 7h Qs
14 17 2
Jh 9s 8s Js
```

Example

```
s 2
Qh 8h Ah 9h
14 0 3
Kh Th 7h Qs
14 17 2
Jh 9s 8s Js
Error:  player 2 should not have any hearts left!
```

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Your score tracker will be provided as a library, implementing the following interface

```
bool game(std::istream &in,
          std::ostream &out,
          std::ostream &err);
```

where:

- `in` is an input stream where you will receive played cards.
- `out` is an output stream where you will print scores.
- `err` is an output stream where you will print any error.

The function will return `true` when the game is over, and `false` if any error occurs.

Constraints

In this first assignment:

- you will only use existing C++ and STL-provided data structures;
- you can use `typedef`s, but cannot create your own objects with `class` or `struct`;
- you can use C++ 2011 and 2014 features;
- your code **must** compile with `g++ -std=c++14 -Wall -Werror`.

How to submit?

- You will use the submission platform, course INFO0004-2.
- You will submit an archive `s123456.tar.xz` containing a `s123456` folder, containing the two files `belote.hh` with your interface, and `belote.cc` with your implementation.
- We will provide the `Makefile` and `main.c` on our own, so do not provide yours.
- The submission platform will ensure your code compiles and run a few functional tests.

Deadline

- Official brief will be posted tomorrow on the web page.
- You'll be able to submit before the end of the week.
- You should submit before **Tuesday the 17th of March**, 23:59 CET. Only your last submission will be taken into account.
- Late submissions will be accepted, but with a penalty of $2^n - 1$ points (/20), where n is the number of started days after the deadline.

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Outline

Questions and (possibly) answers