Programming

Assignment 2

System programming 2016

Introduction

In this assignment, you are going to practice communicating among processes.

The goal of this assignment is to practice multiple- process control via pipes and FIFOs, and to understand the use of fork().

Game

- Four players attend a competition.
- Each player tells a number in **{1, 3, 5}** to the judge without knowing other's.
- The player who says the number that is only said by him will get points equal to the number he says!
- The judge will then announce numbers said by all players. A competition will hold 20 rounds.

Game

A	B	C	D
5	5	3	1

GET 3 POINTS! GET 1 POINT!

A	B	C	D
5	5	3	3

Nobody gets point!

Big Judge

- After a competition completed, the judge should return the ranks to **the big_judge**.

- The big_judge schedules all the competitions to judges. He has a list of players, and lets every four players compete.

- If there are N players in total, then the big_judge has to arrange C(N, 4) competitions and assign a judge to each competition.

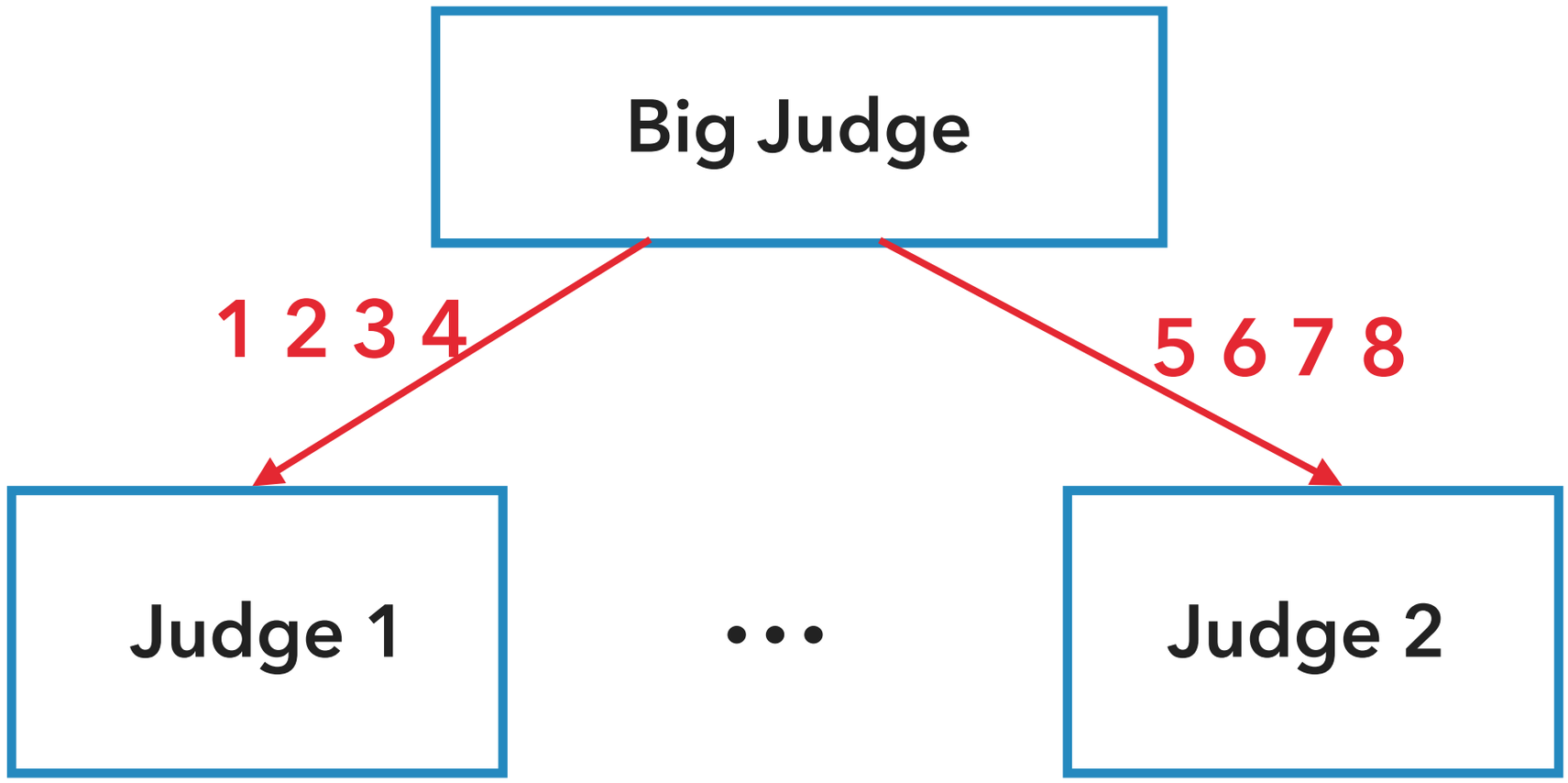
Big Judge

- There will be only limited judges. A judge is only able to preside a competition at a time.

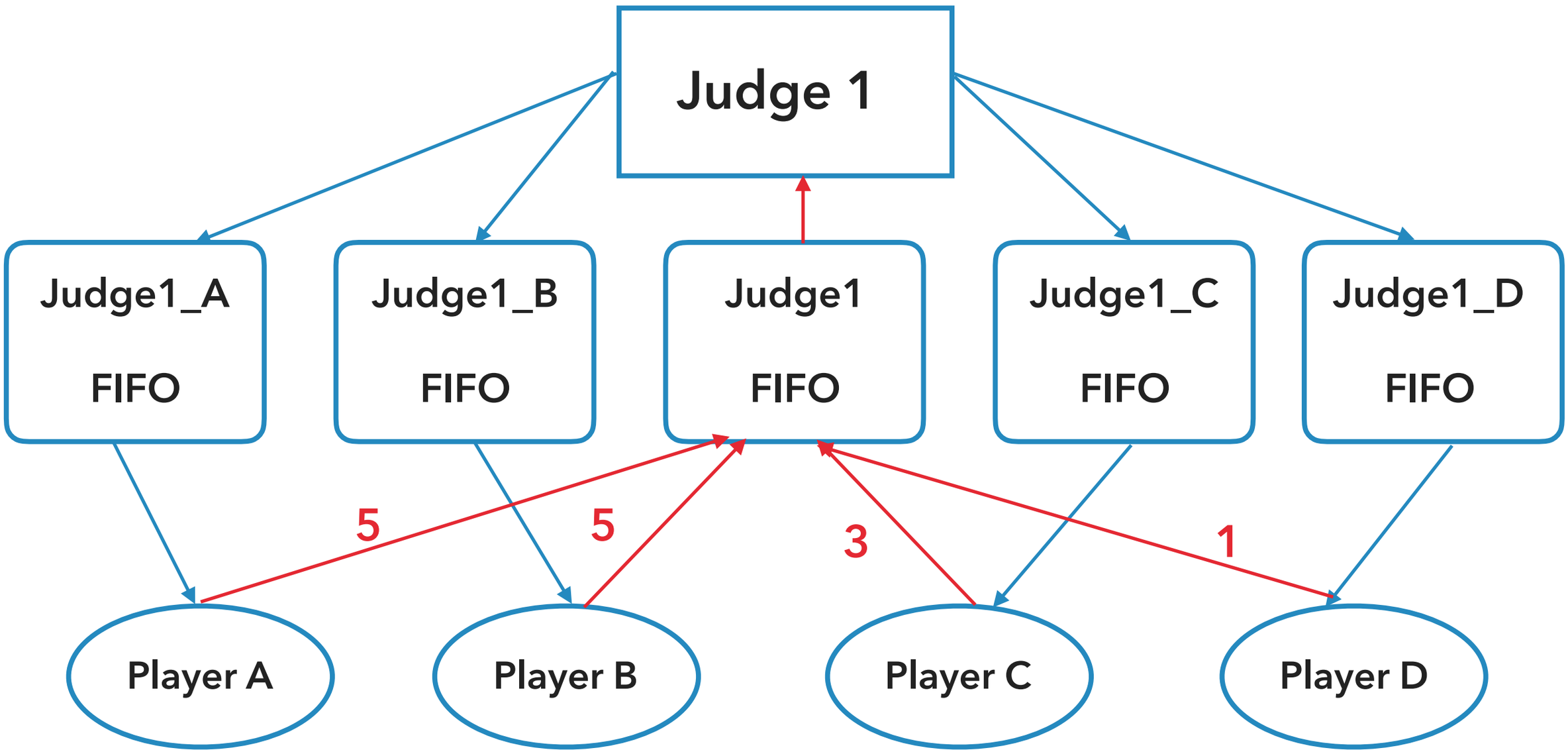
- The big_judge can only assign a competition to an available judge, and not until the competition ends does that judge can take over another competition.

- The big_judge should add scores to the players' accumulative scores according to their ranks.

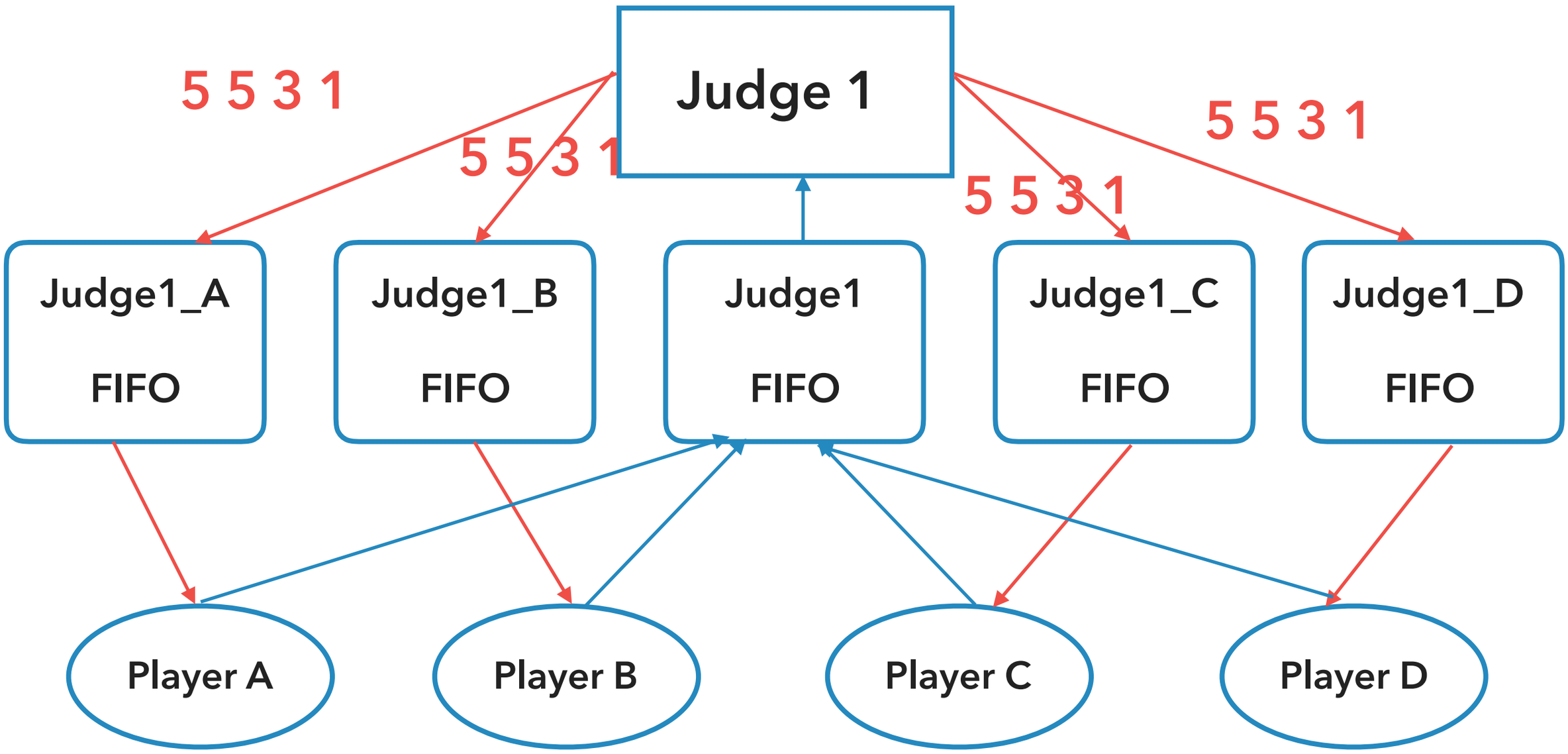
Big Judge Assign Competitions



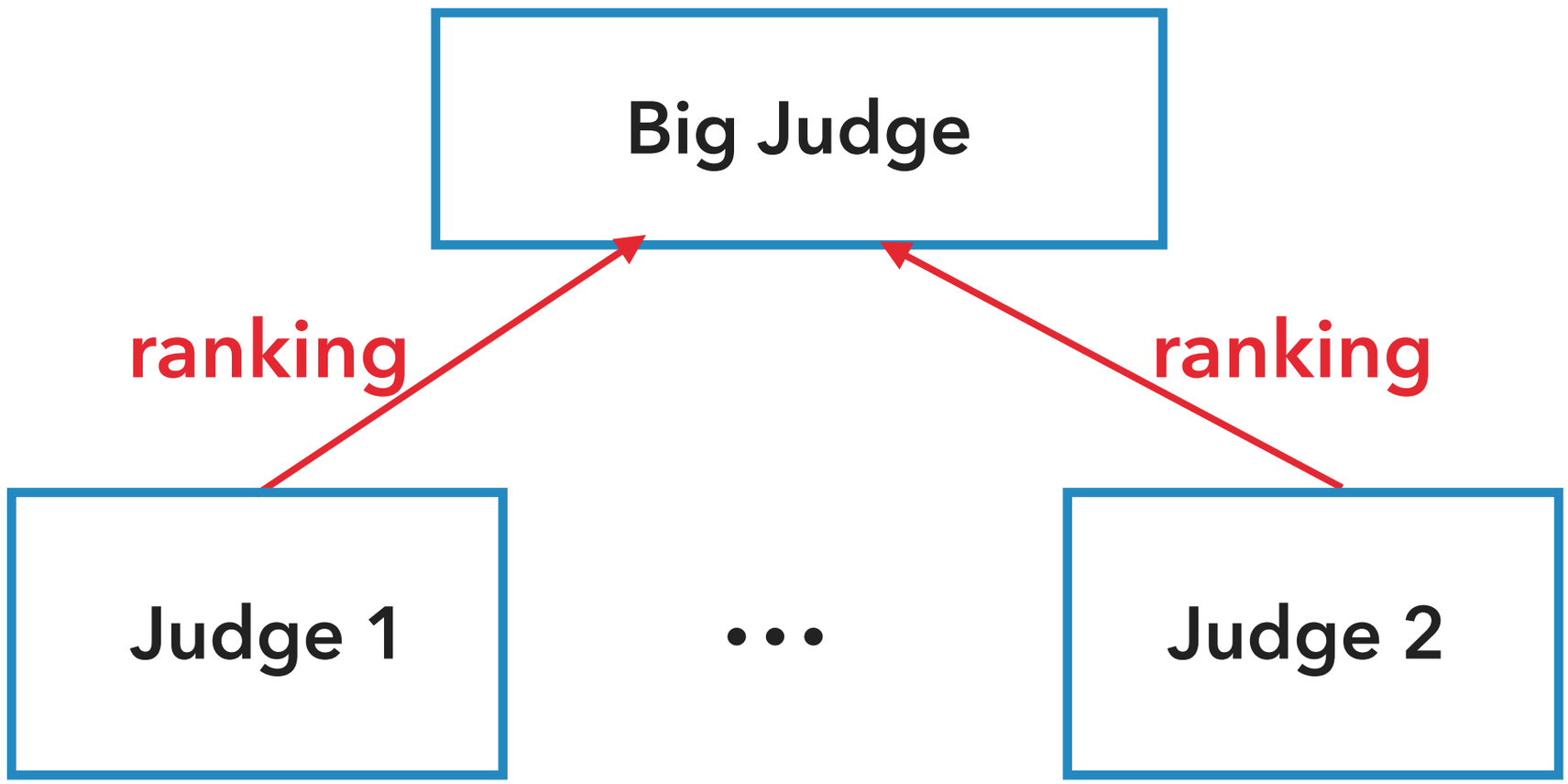
Return Results



Return Results



Big Judge Assign Competitions



What Should you do?

mkfifo()

Judges should create FIFOs so that players can talk to them.

fork()

Both big_judge and judge should fork child processes. For big_judge, notice doing redirections before you execute judges!

exec()

Run judges/players with arguments.

How can I get full score?

1. If judge works fine (2 points)
2. If judge.c detects time delay (1 point)
3. If player.c works fine (1 point)
4. If big_judge.c works fine (1 point)
5. If the processes correctly stops (1 point)
6. Completeness and Output format(1 point)
7. Bonus:

   There would be a competition held for all students' player. The top 12 players would get 0.5 point bonus. The overall 2 players would get extra 0.5 point bonus.

Demo

Please fill your available time and bring your computer at that day.

Link: https://goo.gl/d4KNZU

Location: To be decided

Submission

Course Website: http://www.csie.ntu.edu.tw/~pjcheng/course/sp2016/lastnews.html

Submit your program before **11/22(二) 23:59**

Late policy :Your credits of this assignment will be deducted 20% for each day of delay submission (lose all your credits on this assignment after 5 days delaying)

Question

If you have any question, please feel free to send email or ask at TA hour or ask on Facebook's course group.

Mail: ntucsiesp@gmail.com

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