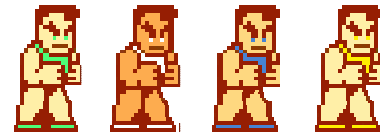


## Dodgeball!

**TIME: 2 hours**



Just in time for the 2010 IT Olympics, we have created an interactive dodgeball video-game for you to enjoy. The catch is, in order to play (and win), you have to learn a new programming language, the Dodgeball Programming Language (DPL).

The gameplay is simple, yet addictive. You are in control of a team of four customizable players, in a dodgeball competition against three other teams. The DPL syntax allows you to select your players, move them around, throw balls around the room, and turn and defend as necessary. The scoring is as follows:

- If a player on your team catches a ball, the person who threw the ball (if on a different team) is out, and your team gets one point.
- If a player on your team throws a ball that hits a player on a different team, that player is out and your team gets one point.
- If a player on your team hits another member of your team, that player is out and your team loses one point. Be careful where you decide to throw those balls!

You are given the dodgeball game executable, as well as a sample DPL file that you can edit. The game can either be run using a single DPL file (for testing your individual team), or with four DPL files (for the competition part). Let's explore the syntax of the sample DPL file:

```
P1.Create Attacker
```

creates the first of your team's four players as an "Attacker" class. Your DPL program should create four such players P1, P2, P3, and P4.

```
P3.Move 0 16
```

commands your third player to move to position [0, 16] on your team's grid. Each team is fixed to a 17x41 grid, and you are allowed to move your players to any integer location [0-16, 0-41]. Note that the time it takes for your player to move is dependent on that player's speed attribute.

P2.Defend 120

commands your team's second player to defend for 120ms. In "Defend" mode, a player cannot throw a ball but has the possibility to catch any ball thrown in its catch radius.

P4.Turn 45

commands your team's fourth player to turn 45° to the right. The players can turn in any direction in a full range [ 0-360°], with 0° corresponding to straight ahead. This turning operation is instantaneous. In order to catch a ball in "Defend" mode, a player must be facing (or close to facing) the ball coming their way. Finally,

P1.Throw

commands your team's first player to throw the ball! Depending on the player's attributes, it will take a variable amount of time to reload for the next throw.

Experiment with the DPL syntax on your own for the first half of this challenge. Then, your team will be entered into a round-robin style tournament against the other competitors. You can tweak your team's moveset after every round of the tournament, although once begun the games will go by very quickly!

You can select your four players from any combination of the following seven player classes:

1. **Attacker** — specializes in throwing the ball quickly
2. **Defender** — specializes in catching the ball
3. **Captain** — a good overall player
4. **Enforcer**— a slower mover with forceful throws
5. **Goalie** — has a wide radius for catching
6. **Sprinter** — can move very quickly
7. **Pest** — can catch and defend, but not much else

Your task is to build a team that can score the most points in a given round. The basic rules will not change, but some aspects like the structure of the walls (i.e. how a ball bounces) may be modified as the tournament progresses.

Have fun!