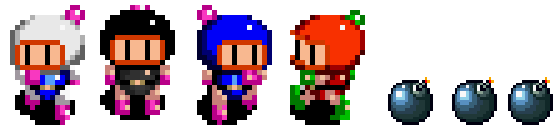


## Boomtown!

**TIME: 2 hours**



Just in time for the 2011 IT Olympics, we have created an interactive Bomberman-style video-game for you to enjoy. The catch is, in order to play (and win), you have to learn a new programming language, the Boomtown Programming Language (BPL).

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

- If a player on your team gets hit by a bomb, that player is out, and the player who dropped the bomb (if on a different team) earns one point for their team.
- If a player on your team drops a bomb that hits a player on another team, that player is out, and your team earns one point.
- If a player gets hit by a bomb dropped by a player from the same team, that player is out and the team loses one point.

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

```
P1 Captain
```

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

```
P3.Move 4
```

(Note the period between the player ID and command). This commands your third player to move four positions forward on the map grid. Each team begins at a fixed corner on the map grid, and the game is setup such that your movement commands are independent on which corner you are assigned to (the game is perfectly symmetric in this fashion). Note that this movement variable must be an integer, and the time it takes for your player to move one space is dependent on that player's speed attribute.

P2.Drop

commands your team's second player to drop a bomb at the current location. Each player has a preset bomb carrying capacity (with an unlimited stockpile supply), and if a player attempts to drop more bombs than they can currently carry, this command will wait until one of the previous bombs has exploded before continuing. Note also that the bomb will go off in a short period of time (resulting in a cross-shaped explosion), so after dropping, your players should quickly move out of the way!

P4.Left

commands your team's fourth player to turn to the left. Other similar commands are `Right` (which turns to the right), and `Reverse` (which reverses direction). Unlike the movement commands, turning is instantaneous; consequently each player has four degrees of motion and can traverse to any grid cell in the map. Finally,

P1.Wait 10

commands your team's first player to wait. The player will stand idle in their current position until the integer value associated with the wait command counts down to 0. Waiting is a good idea when a bomb has just been dropped and the player has since been moved to safety.

Experiment with the BPL 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. **Captain** — all-around strength, chosen more for leadership qualities than any special bomb-dropping characteristics.
2. **Ghost** — can walk through bombs that have been placed on the ground. However, once the bomb goes off, these players are still quite vulnerable!
3. **Stretcher** — bombs explode with a larger radius, tradeoff is with speed and carrying capacity.
4. **Safety** — a slower mover that is immune from their own team's bombs! Potentially quite powerful.
5. **Sprinter** — can move very quickly. Useful for getting the early upper hand.
6. **Hoarder** — extra bomb capacity. Can create lots of mid-game carnage.

7. **Hulk** — requires two explosions to defeat. Note, however, that each explosion scores as a point for the other team (or deducts one from your own team for friendly fire).

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 grid (i.e. size of the grid and where your players can freely move) may be modified as the tournament progresses.

Please test your .bpl files before submitting, to make sure that they compile correctly. Most importantly, have fun!