

# Totally Not Bomberman

**Basic exercise:** 85 / 100 points max.

**Advanced exercises:** add 10 points per completed exercise, maximal +40 points. Complete at least some of these for full 100/100 points.

Points can be subtracted for incomplete, convoluted or buggy solutions and bad practise.

## Basic Exercise

You will end up with a simple, playable, 2-player version of the popular Bomberman game.

You can check back with the builds online for every step to see if you completed it successfully here: <https://benno-lueders.de/dis/TotallyNotBombermanAssignment/>

Feel free to ask any questions in the attached Discussion Forum of the exercise on Canvas (Game Development Lab Course)

1. Create Player 1 and implement basic rigidbody based player movement.
  - a. Using Rigidbody2D physics (by setting its velocity) for movement.
  - b. Up-, Down-, Left-, Right-Arrow to move.
  - c. You can use any sprites from the supplied sprite sheet that you like.
2. Implement functionality for placing (instantiating) of a bomb.
  - a. The bomb itself does not need to do anything for now.
  - b. Right-SHIFT for placing bomb at players position.
3. The bombs should destroy after 2 seconds and spawn an explosion.
  - a. The explosion disappears (destroys self) after 1 second.
  - b. For now, neither bomb or explosion need to have animations.
4. The bombs should hit players and boxes close to them when exploding. Shoot 4 2D Raycasts (up, down, left, right) for 2 units on the bomb explosion and detect players and boxes that are hit by them.
  - a. When a Player is hit, the level restarts.
  - b. When a Box is hit, it is destroyed.
5. Modify the Player so it is looking into the direction of walking.
  - a. Change the sprite to a up/down version respectively and use the side version for left/right. Toggle the flipX option of the Sprite Renderer for left/right visuals.
6. Make it multiplayer and add Player 2.
  - a. Controls are W (up), S (down), A (left), D (right) and Left-SHIFT for placing a bomb.
  - b. Use any other graphics you like from the sprite sheet for Player 2.

# Advanced Exercises

**10 points per completed exercise, max. 40 points total.**

1. Implement sprite flipbook animations for:
  - a. (*easy*) The bombs when counting down to explode.
  - b. (*easy*) The explosions.
  - c. (*medium*) The players when moving. The animation should halt when standing still.
2. (*medium*) Implement grid-based placement for the bombs instead of the current free placement. When a grid position is taken by an already placed bomb, no new bomb can be placed there until it exploded.
  - a. You can round the position to the closest Integer to do this and check with a Raycast if there is already a bomb present at that location.
3. (*medium / hard*) Modify the bomb behaviour to block the players movements.
  - a. If the bombs always have collision enabled, they will cause the player to be displaced weirdly when a bomb is put down. Find a solution that will cause the bomb to block a players path, but not cause the player to “jerk” or be moved when the bomb is placed.
4. (*hard*) Modify the explosions so that they extend into the four directions for the distance of the bombs explosion radius until they are blocked by a piece of the level.
  - a. You can for example create objects with the respective sprites attached and spawn them along the four explosion axes.
  - b. There are no flipbook animations for this type of explosion included in the spritesheet.