Project: Tetris in 3D

Write your own 3D version of the well known Tetris game. In the following description z denotes the direction of gravity. The x-y-Plane is the plane perpendicular to the z direction.

Requirements:

1. Create a playing field of suitable size (e.g. $5 \times 6 \times 12$ units). Display grid lines.

2. Create pieces according to https://en.wikipedia.org/wiki/Tetris. Different pieces must have different colors. You are free to choose any color scheme.

   Create the pieces out of cubes with bevelled corners (Hint: see documentation of THREE.ExtrudeGeometry).

3. Add the following key controls:

   - The arrow keys shift a piece by one unit in the x-y-Plane.
   - The keys [x], [y] and [z] rotate a piece by 90° around the x-, y- and z-axes of its local coordinate system.

4. Implement two playing modes which can be chosen with some check box:

   - Manual mode: A piece can be moved up and down by arrow keys:
     - Add keys [a] and [q] to shift a piece by one unit in the z direction.
     - Pressing the space bar should fix a piece in the playing field and add the next piece to the game.
   - Automatic mode: a piece automatically moves down as long as possible. The next piece appears as soon as the previous piece stopped moving.
     - Pressing the space bar should drop a piece immediately to its lowest possible z-coordinate and add the next piece to the game.

5. Make sure two pieces can never overlap!

6. Make sure all rotations and translations move the pieces such that all cubes occupy complete cells in the playing field.

7. As soon as a level of the playing field is completely filled with cubes all cubes in this level are removed from the game and the pieces at larger z-coordinate drop down by one unit. Note that if a level is removed from the game only those cubes of a piece which are within this level are removed.

8. Add a counter that counts the number of cubes in the game. Cubes removed from the game must also be counted.

9. Display the key controls as a help text.

10. Stick to the coding guidelines.

Further hints:

- Please ask if anything regarding the requirements is unclear.

- Play your own game. Make sure that it allows for a meaningful playing experience.

Handing in the solution

- Hand in your *complete* solution (`html` and `js` files) no later than the **13th of January 2019**, by email to `klaus.juenemann@haw-hamburg.de`.

- Stick to the coding style guide.