# Arkadium Software Engineer Technical Assignment

This assignment is meant to judge the following areas:

1. Game development architecture
2. Efficient data structures and algorithms
3. Code/Game Objects organization and clarity
4. Delivery speed

Review this video of Mahjongg Dimensions made by one of our fans: <https://www.youtube.com/watch?v=9ObYRegvd_s>. You can also play a few rounds on <https://www.arkadium.com/games/mahjongg-dimensions/> if you’re not already familiar with the game.

The assignment is to recreate the gameplay mechanics of this game and make a build playable on the web (using a WebGL exporter).

The deliverable should include:

1. The entire source code of the game (preferably in a Git environment)
2. A distribution build. We should be able to upload the build to a server and be able to play the game immediately in a browser.

Explanation of required game mechanics:

1. Game has an intro scene separated from the game scene, with a play button.
2. Game has a 4x4x4 cube grid that supports 6 different cube tiles.
3. All types of cube has a distinctive tile representing them in all 6 faces
4. The game has a 5 minute timer, decreasing count in seconds. Player loses if timer reaches zero.
5. Player can click on two cube tiles with the same sprite/colour.
6. Player can click and drag to rotate horizontally the cube (not vertically).
7. Cube tiles can only be pressed if they have mostly one neighbour in each horizontal direction (up and down cubes don’t interfere).
8. Every time the player removes two tiles successfully, they receive 100 points.
9. Player wins if they manage to clear all cubes in the following time.

These features are optional nice-to-haves, but are not required to do for the assignment. Keep in mind that we are more interested on code quality than game polish. Aim to implement a few of them if you can implement them all.

1. A multiplier system for speed, increasing the multiplier cumulatively (from 2x to 3x, 4x, and so on) every time the player takes less than 3 seconds from the last tile match to match a new set of tiles.
2. A pause button, that hides the tiles and opens a panel to unpause the game (and freezes the timer).
3. An additional game end screen, with an option to play again.
4. Visual polish (e.g., animations, particles).
5. Audio integration (sounds and music) – with a menu to turn them on/off.