Preliminary language and engine research

Options

For those of us enrolled in the Graphics Programming course, we have gone over these physics engines:

- Box2D (2D)
  - Very popular C++ engine. Also ported for Java and JavaScript.
- Toxiclibs (2D + 3D)
- Bullet (3D)
- Matter.js (2D)
  - Good web-based. Large community and documentation. It does collisions and connected systems.
  - It is simpler than Box2D.
- cannon.js (3D)
  - Great JavaScript library that works well on the web. However not 2D.

Physics engines will allow us to create a lot of functionality in the game without having to program it ourselves. Such as collision detection, basic physics for projectiles and movement and the process of rendering each frame.

The fact that these were recommended to us by our university is definitely a good thing and I think it would be in our interest to stick within them.

Now, these all have their advantages and disadvantages. Clearly, the 3D only engines are no good to us, considering our game will only be two-dimensional.

That leaves us with:

- Box2D
- Toxiclibs
- Matter.js

I believe using one of these, especially Matter.js, would be in our interest since we are more familiar with it and are already doing a course on it. I also believe that we should try and use a language with which we are all familiar with. I believe that makes **JavaScript** one of, if not the best choice.

Engines

Box2D (C++)

https://box2d.org/

Box2D is a physics engine for **C++**. It is incredibly popular and was used to create games like angry birds. If we want to stick with C++ as a language this is probably the way to go.

Toxiclibs
http://toxiclibs.org/about/

Toxiclibs is a **JavaScript** based engine. I've had some trouble getting information about it right at this moment as the website appears to be down. Not the best sign. But if we want a JavaScript alternative engine, this could be an option.

Matter.js
http://brm.io/matter-js/

Matter.js is a JavaScript and web-based physics engine. It is simpler than the others but retains a lot of functionality. An advantage of Matter.js is our (assumed) familiarity with it, common language (JavaScript) and the fact that it is web-based. This is my personal choice.

Update 1

Jeremy suggested I investigate Phaser.io.

Phaser.io
https://phaser.io/

Phaser is a **JavaScript** and **HTML5** based physics engine. It supports various inputs out of the box, such a mouse and multi-touch (which may be useful if we intend to use our game on mobile). It also supports a plugin system if we want to integrate further utilities, though I am not sure if that would be allowed in our project.

You can see a short run-down of it here: https://www.youtube.com/watch?v=zVRrPeriK4Q

Phaser.io also comes with a tile and sprite system built in, so implementing tiles in our game as well as enemies and towers, as discussed, would be quite simple. Phaser does allow this sprite to have more complex animations but.. depending on our time constraints this may be useless.

In summary, Phaser.io seems like a powerful engine that could streamline a lot of processes. However, it may take some learning, which is somewhat offset by Jeremy's familiarity.

I feel quite good about using Phaser. For me, it is between Phaser and Matter. I am leaning toward Phaser but further discussion between group members is necessary!