EPQ Presentation - 3D

### Main notes

* **Which SDK I chose and why**
  + DirectX: outnumbering all others in quality and numbers
* **DirextX: what it is and how it works**
  + DirectX is Microsoft’s SDK for multimedia development - I will use it for 3D, it will allow me to do 3D, lighting, camera, …
* **Introduction to coordinate geometry**
  + DirectX, or even 3D on the whole, uses the Cartesian plane information system to place ‘points’ (vertices) or shapes (lists of vertices) to the screen
  + The computer screen is a Cartesian plane
  + For 3D, add a z-direction to the planes
* **To start my artefact, I needed to prepare a platform for DirectX to start working it’s operations on**
* **My plan for writing my first application (seen on xmind presentation)**
* **The importance of triangles** 
  + **Triangle strips:** The vertices[] is a “list” or array of coordinates, and when rendered to the screen, produce the triangles seen
  + **Triangle lists:** This time the vertices[] can be split into 3 different triangles - the three first ones and the three last ones, compared to the triangle strip, there is no triangle separating the two triangles, which is the prime difference between list and strip.
    - Strip: attached
    - List: detached
* **Creating a 3D application** 
  + To create a 3D application I needed to start with basic shapes, so why not a triangle, after all I’d learned.
  + **PRODUCE ARTEFACT: combining 2 triangles together, I got a rectangle! (wireframe)**
* **Problem: the split perspective: Mathematics versus Informatics** 
  + How I solved it: giving details and accounts from both sides (as will be seen on the next slides).
* **Giving it motion and rotation**
  + Matrices are what are used to “transform” objects, or points on the screen that compose a whole shape, the outcome is that the whole shape will appear transformed, although all that happens is, for example transforming point (3, 5) to (6, 10).
  + Next - maths and computing example, we only rotate the X axis.
  + **Working example: explain and PRODUCE ARTEFACT AND USE LEFT AND RIGHT (wireframe)**
  + This illustrates how we can transform, if we render the model- we get this.
  + Next, if we make all of the rotations, this is what we get (enter key on artefact).
* **Extension - how I could have evolved the application.**
* **Questions.**