# Assignment 1: Alien World

The scene describes a spaceship and some aliens are preparing to liftoff on a remote planet. The spaceship is in the shape of a UFO with rotating crystals around the main cabin. The body of the UFO is created with two cylinders mirroring each other so the sphere in the middle looks like it is hovering inside the ring. Two alien models are walking around to guard the ship while it’s preparing its takeoff. One of the alien models has a spotlight attached to it for spotting unwanted creatures. There is also a control tower nearby to signal the spaceship with additional information. This remote planet is within the same solar system as Earth, so the Earth is visible from the planet's surface.

## Extra Features:

* Planar shadows cast by one of the aliens and the control tower
* Spotlight on the other alien
* Skybox of dessert
* The body of the tower is a sweep surface generated using quad strips
* Physics models: Projectile from spaceship cannon
* Spaceship liftoff

Equations:

* Projectile
  + The horizontal position ( x ) is calculated using the equation: x = v0​cos(θ)t, where v0 is the initial velocity theta is the launch angle and t is the time elapsed
  + The vertical position ( y ) is calculated using the equation: y=v0​sin(θ)t−0.5gt2, where g is the acceleration due to gravity.

## Control Functions

* Space: Spaceship liftoff
* Arrow Keys:
  + UP: Move camera forwards
  + DOWN: Move camera backwards
  + LEFT: Turn camera left
  + RIGHT: Turn camera right
* S key: Shoot projectile from SpaceShip

## Instructions to run the program

The program was developed using Visual Studio on a Windows machine. All required files are in the project folder so the program should run just by clicking the green run button in IDE.

Declaration

I declare that his assignment submission represents my own work (except for allowed material provided in the course), and that ideas or extracts from other sources are properly acknowledged in the report. I have not allowed anyone to copy my work with the intention of passing it off as their own work.

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