

**Lab Goal :** This lab was designed to teach you more about OOP and using Abstract Classes and Interfaces.

**Lab Description :** Write a space shooter game. You are the StarFighter and your job is to destroy all of the enemies moving around in space. The StarFighter ship and the enemy ships will share lots of the same properties. This lab provides the perfect opportunity to use inheritance, abstract classes, and interfaces. You will also review ifs, loops, and ArrayLists in the creation of your game.

**Task One** – Write the MovingThing class. Make sure you think it through and that it compiles. Test it thoroughly.

**Task Two** – Extend the MovingThing class to make the Ship class.

**Task Three** – Use StarFighter and OuterSpace to test the Ship class. The Ship should have rear thrust which will accelerate it and be able to rotate left or right visually.

**Task Four** – Extend the MovingThing class to make the Alien class.

**Task Five** – Add two Aliens to the OuterSpace class. Do NOT use an ArrayList or Matrix to start. This will be added in later. Test the Alien class to make sure all methods work. Alien movement can be determined later, and they will be able to move in any direction as the game progresses.

**Task Six** – Make your Ship shoot some type of Ammo in the direction that it is facing. You must make an Ammo class that extends MovingThing. Start with just a single Ammo. An ArrayList of Ammo will be added once the single Ammo has been tested thoroughly.

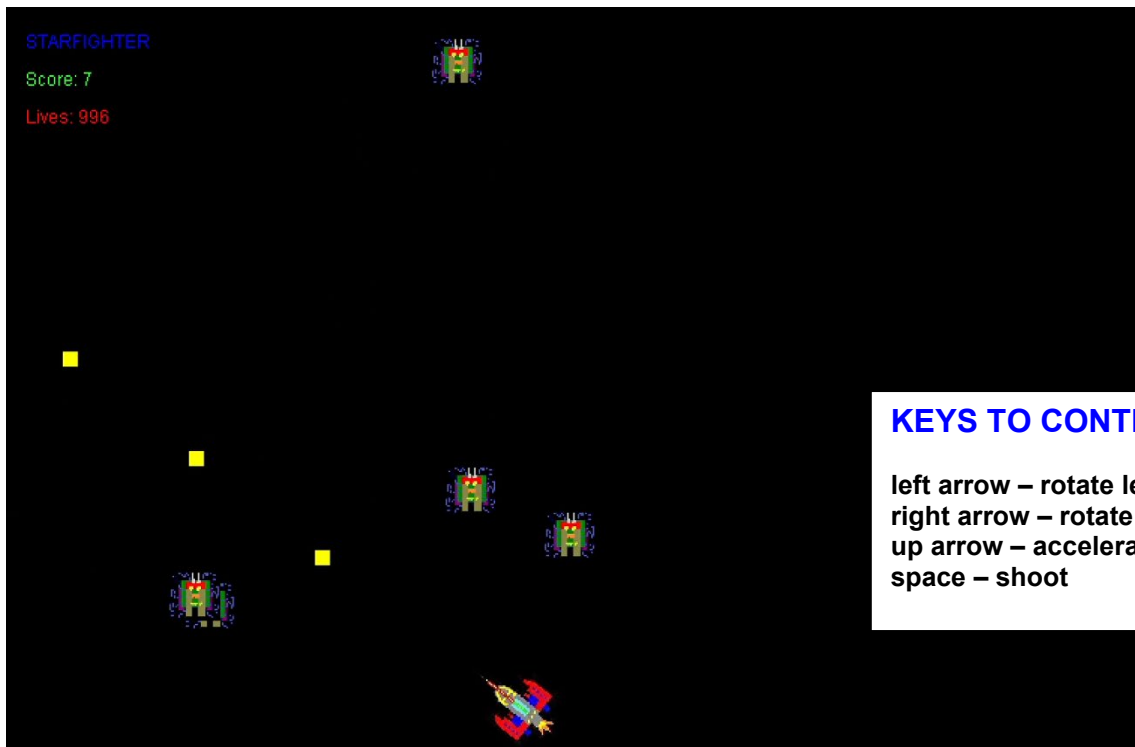
**Task Seven** – Make your Ship shoot and destroy the Alien. Create a system to keep track of how many aliens you shoot, and make the alien fade away after it is destroyed.

**Task Eight** – Make a new class called AlienHorde. AlienHorde should contain a list or matrix of Alien references.

**Task Nine** – Make a new class called Bullets. Bullets should contain a list of Ammo references.

**Task Ten** – Make the ship appear on the other side of the screen if it goes off of screen. Top to bottom and side to side.

**Task Eleven** – Create a win screen and a lose screen based off your own win/lose conditions. Make the ship fade away if it collides with an enemy.



### KEYS TO CONTROL THE SHIP

left arrow – rotate left  
right arrow – rotate right  
up arrow – accelerate  
space – shoot