Computer Organization and Assembly Language

SPRING 2022

Project

Galaxy Attack: Alien Shooter

Final Submission Deadline: Sunday 29th May 2022 @ 11:59 PM

Introduction:

Earth's last hope is in your hands, take control of the lone spaceship and protect Earth from alien swarms. Your goal will be quite challenging as you will have to save the Universe from its evil enemies. In this space shooting game, you will be facing an increasingly large number of enemies in hazardous environments. As the game progresses, you will earn the right to upgrade your spacecraft to unleash its full lethal capacity.

In this project you have to develop a *mini* version of the alien shooter on the console using Assembly language. You have to develop three different levels of game. The description of each level has been given below.

Other than these three levels you have to also make game start and end screens. First of all start screen will show up the name of the game, followed by the screen that asks for username. At the end, the screen should show the score, level and *Win* or *Lose*.

Main menu:

Level selection
Start game
Player information (File handling will be implemented here)

Level 1:

At Level 1, you have to create the characters of enemies and spaceship. On the start of the game, there should be centralized Space ship with attacking bullets along with randomized pattern of enemies/ aliens. Now your spaceship will start shooting the enemies and scores gets updated simultaneously. Once all the enemies are killed, level will be completed and you have to start the next. Below is example screenshot.

You are required to implement following things:

Spaceship

- Proper body of spaceship similar to the one in screenshot
- Try to be creative while designing the spaceship.
- Spaceship should shoot the enemies and enemies would disappear along with the Explosion

Enemies

— You have to draw at least one pattern of static enemies of different sizes.
— You can draw enemies as you want but not less than 20 enemies.
— You have to detect the collision of the enemy with the bullets which will result in the death of the enemy.

Score

— Score should be displayed.

Movement

— To move Spaceship, use the left and right arrow keys.
— It should fire enemies and score will be updated simultaneously.

Level 2:

At Level 2, all the things you have done in Level 1 should remain the same, and you have to implement the following:

Pattern randomization:

— Pattern should be random. (i.e everytime pattern will be different).

Enemy Movement:

- Enemies should move randomly in all directions.
- Enemies should be of different type.

Enemy Collision

- You have to detect the collision of the enemy with the bullets which will result in the death of the enemy. Also you have to detect the collision of the enemy with the spaceship which result in the deduction of scores.

Score should be updated in all levels

Level 3:

At Level 3, all the things you have done in Level 2 should remain the same, and have to add monster and special enemies. You are required to implement following things:

Special Enemy Movement

The special Enemies should come from left and right. You have to jump in order to get yourself saved. Boundaries of the screen are fixed.

Monster

- You have to create monster which fly at the top of the scene.
- It throw objects to kill the spaceship
- If monster thrown objects collide with spaceship game will over.
- Monster Character for reference is attached below:

Instructions:

The project is to be submitted in levels.

- Level 1 is to be submitted with report on 15th May 2022.
- Level 2 is to be submitted with report on 22nd May 2022.
- Level 3 along with Level 1 & 2 (complete game) is to be submitted with final report on 29th May 2022.
- The project consists of 3 phases. Each phase will have a deadline. If you miss a deadline of a particular phase you will not be awarded any credit in that phase.
- Each next phase will be dependent on the previous phase, so you must start working on the project from day-1.
- You are required to work in MASM. Project incompatible of MASM will not be considered.
- A group of size 2 or 3 is allowed.
- Cross Section groups are **not** allowed.
- User Interface is important in this project. Try to develop an attractive user interface.
- Use of extra features in the project is encouraged.
- Use good programming practices (well commented and indented code; meaningful variable names, readable code etc.).
- Copy/cheating case will be awarded an “F” grade in the course.

Good luck ☺