

CS2513 - CA 2 - 10 marks

Due: 2359hrs 30 November 2022

All work must be your own and is bound by UCC's Plagiarism Policy described in the lectures. If in doubt ASK!

Task:

This assignment requires that you use PyGame to implement your own version of the '80s classic Space Invaders arcade game. This should be written using the applicable principles of object oriented programming as discussed in CS2513 lectures. You should also document your code. Furthermore, provide a PDF that describes, in reasonable detail, how your program works.

Submission will be through Canvas. Zip up all files that you are submitting and upload this in the CA2 Assignment on Canvas.

Space Invaders:

Space invaders was an alarming simple and notoriously addictive arcade game in the early 80s. Originally it was played on large cabinet style units as shown below. These were coin paid, and to be found in pool halls, small shops and cafes/bars/etc. The game was characterised by simple controls (left/right and fire buttons), 16bit music and colour. Later, small form arcade games could be bought for home use. If you were so inclined, and had a Spectrum or Comodore 64 computer (or clone of), you could implement your own version - or at least try to.



The original game play is shown at this link -<https://youtu.be/MU4psw3ccUI>. Our game will be a little simpler than the original game. In the original, there were some special alien craft that periodically appeared, the aliens could fire on our ship and we had asteroids to hide behind - we won't have those features.

We will have the following:

- Our space ship will be on the bottom of the screen. It will be capable of moving left and right and will be bound by the limits of the screen. We can control these movements by pressing the left and right arrows buttons on the keyboard.
- Several alien spaceships will appear at the top of the screen and move from one side of the screen to the other. When they reach the opposite side of the screen they will down the screen (by a distance equivalent to their own height). As the top row of space ships move down, new alien space ships will appear on the row.
- If an alien space ship reaches the bottom of the screen it will eventually be in the same plane as our spaceship. When they touch the game will be over.
- Our spaceship is capable of launching rockets. These will be triggered when we press the space key. The rocket will appear just above the position of our spaceship when the key was pressed and will then move quickly towards the top of the screen. If the rocket touches any of the alien space ships we will remove both the rocket and the alien from the screen. Our ship can fire as many rockets as required, but we can only fire one per second.
- We will display a piece of text with the score on the top left of the screen. For each alien shot down, we will award 5 points.

You can explore other features of PyGame and embellish your implementation. For example, adding sound is a fun addition. These are not necessary for the implementation but are a nice feature to add if you feel like taking your implementation further.