Title: Alien Invaders (working)

Description: Alien Invaders will be an arcade style shooting game in the style of Space Invaders.

Gameplay: The player will control a ship located at the bottom of the screen. Using the left & right arrow keys, the player will move the ship horizontally across the screen. Pressing the spacebar will fire the ship’s weapon upward. There will be multiple levels, with enemies placed around the screen in various formations and configurations. Each enemy type will have a unique movement and behavior pattern. The goal of the game will be to defeat each level’s set of enemies using the ship’s weapon(s), and progress through all of the levels, achieving the highest score possible.

Score: The score is kept and displayed in the upper area of the screen. Players can increase their score by defeating enemies and collecting power-ups.

Lives: The player will start the game with a set number of lives (3). Lives are lost when the ship makes contact with an enemy object, or a weapon that is fired at it. Players can gain extra-lives by activating a power-up.

Game Objects:

* Ship: Controlled by player using arrows. Moves left & right across bottom of screen. Fires weapon by pressing the space bar.
* Laser: Default weapon. Fired using the space bar. Travels upward at a set speed until hitting an enemy or leaving the screen and then is destroyed. Limit is placed so that only (3) instances of this object can be created at a time.
* Power-ups: Power-ups will be objects that are created when specific criteria are met, that give the player a temporary increase in power in order to vary gameplay and assist during difficult times. They will each have a unique sprite and must be shot or hit by the ship to be activated. Some may be static on the screen, and remain until activated, and some may move across the screen and be destroyed if not activated before leaving the screen. Power-ups will remain available across levels.
  + Double Laser: Fires two, side-by-side lasers at once instead of the single laser of the default weapon. Generated each time a set score interval is reached (10000 points). Object will be created in the center of the screen and will remain there for 5 seconds. Provides (10) double laser shots. +200 to score.
  + Extra Life: Grants the player an additional life. Generated each time a certain number of enemies have been destroyed (200). Object will be created at the top center of the screen and fall towards the bottom at a set speed. Player must activate the object before it leaves the screen. +300 to score.
  + Bomb: A weapon that is fired, and upon contact with an enemy object explodes, destroying all enemies within a specific radius (50 pixels). Player will receive 1 bomb upon activating the power-up, and they can be fired by pressing the Down arrow. Created when all of specific type of enemy are destroyed on each level (Bomber). Will be created in the location of the Bomber enemy when it is destroyed and will fall towards the bottom of the screen. Player starts with (2) bombs. +500 to score.
  + Spread Laser. Fires 3 Lasers in a spread pattern, at 40, 90, and 140 degrees (where straight up is 90). Generated each time a set score interval is reached (15,000 points). Will be created in a random location off the top on the screen and will move towards the player’s location at the time of its creation at a set speed. Will be destroyed if the player does not activate before it leaves the screen. Provides (5) Spread Laser shots. +500 to score.
  + Shield: Provides the player with a temporary shield that protects the ship from enemies and their weapons. Will absorb a pre-set number of hits (5), before being deactivated. ~~Will be created when all of the (Shielded Alien) enemies are destroyed, and will be placed in the center of the screen, remaining until the player activates it. Upon activation, the user can “turn on” the shield by pressing the “UP” arrow.~~ Created upon the start of the game. Every (50) enemies kill will create another power up. Power up will be created center screen towards the bottom. Will remain for 3 seconds. +500 to score.
* Enemies: Enemies will be objects on screen that the player must destroy with their weapon, in order to clear the level. There will be various types, all with their own unique sprite and on-screen behavior. Destroying the enemies will increase the score by varying amounts, dependent on the specific enemy. Some enemies may release Power-ups.
  + Blue Infantry: Most basic, and numerous enemy unit. Created in “formations” of several units, with the size and shape varying between levels. Starting from its initial location, each unit will move to the right 8 steps (each step being 16 pixels), then drop down a step (down steps are 32 pixels), and begin moving to the left 16 steps, then drop down a step, and begin moving right 16 steps, then repeat. Each step will occur every ½ second. The formation will continue to advance towards the player unless all units are destroyed. These units do not fire weapons. +100 to score.
  + Red Infantry: Same as the Blue Infantry, except its sprite is color swapped to appear red. These units will be placed with Blue Infantry units’ formations. And will move in the same way. These units however, will fire a laser straight down at random intervals. Requires 2 hits to destroy. +250 to score.
  + Green Infantry: Same as Blue Infantry, but green in color and will increase in speed as it moves down the screen. +150 to score.
  + Yellow Infantry: Same as Red Infantry but will increase in speed as it moves. +300 to score.
  + Flying Saucer: Enemy that will be randomly generated anywhere off of the top half of the screen, and upon generation will begin moving straight towards the ship’s current location. Does not change direction from its initial course and does not fire weapons. Acts like a “kamikaze” attack. These enemies will continue to be generated at random, until all other enemies are destroyed. +200 to score.
  + Bomber: Enemy unit that will move left and right across the screen at a constant speed, and an altitude that varies between levels. The units will drop bomb weapons at set intervals (5 seconds), that will explode when they reach the bottom of the screen, hitting the ship if it is within (25) pixels of the bomb. Bombers will take 3 hits to kill. Upon destroying the Bomber units, the player will be given the Bomb power-up as described in the power-up section. +300 to score.
  + Shielded Alien: Enemy unit that possess a “shield” that allow it to absorb (10) laser hits, before being destroyable. Will move along an oval patern, firing lasers. Upon destruction of all the Shielded Alien unit. +600 to score.
  + Fighters: Enemy unit that will “swoop” in from off the screen in an arch towards the player, firing a laser. Will usually be placed in formations with multiple fighters, and will continue to “swoop” until destroyed. +200 to score.
  + Viper: Enemy unit that forms in a long string of several units, and flies in a swerving path across the screen from top corner to bottom corner. Will do 2 passes making an ‘X’. Does not fire. +100 to score.
  + Bosses: After 5 levels there will be a “boss” battle. These will consist of a single, large, powerful enemy unit, each with their own unique behavior and weapons, and that take multiple hits from the play to defeat. May or may not also contain other enemy units to provide additional challenge. May also provide additional power-ups upon defeat.
    - Bosses:

1. The first boss will be multiple Shielded Alien enemies as described above.
2. An Asteroid Mining Robot that throws asteroids at the player, along with having a large drill that is dropped towards the player and does considerable damage if hit. Player must destroy each separate component of the robot before destroying the main body.
3. A large menacing looking space station craft, visually inspired by the second Death Star from Return of the Jedi. Periodically fires a large super laser which the play must avoid, while also dodging laser fire.
4. Large ship, similar in look/shape as a stealth bomber, with multiple lasers and shields. The shields will cover the majority of the ship, leaving only the weapons exposed. Since the player can only hit the weapons he/she will have to time ship movements and shots to be between the boss’s fire.

Levels/Stages: There will be several levels with varying enemy formations and setups which will be capped off with a boss level. After each boss fight the level background will change, indicating a change in location. Progress from deep space to a planet’s atmosphere.

* Stage 1: Deep Space. Background will be a scrolling “star field” with multiple layers of stars moving at different speeds to give illusion of moving through space.
* Stage 2: Asteroid Field. Background will have fewer star layers but will have multiple asteroid layers scrolling by. Will also have asteroid objects that move in from the top portion of the screen that can damage/destroy the player and enemies if they are hit.
* Stage 3: Orbiting a planet. Background will have an image of a planet as the base layer, made to look like it is rotating (if possible). The planet will take up the bottom portion of the screen, showing about ½ of the planet. Stationary stars and/or sun in the background.
* Stage 4: Planet Atmosphere. Background base will be generic land/water scrolling by with multiple layers of clouds and haze.

Story Intros:

1. Deep Space Stage: “You are the last remaining pilot of your world’s starfighter forces. You must fight through deep space towards your enemy's home world, in order to defeat them for your people!”
2. Asteroid Field Stage: “You have reached your enemy’s solar system and are approaching their home world. You must battle through a well defended asteroid belt before reaching the planet.”
3. Orbital Stage: “You have entered orbit around your enemy’s home world, and must battle their defenses before entering the atmosphere.”
4. Atmosphere Stage: “You have entered the atmosphere for your final assault on your enemy’s home planet. Defeat the remaining enemy forces and destroy the enemy mother ship!”
5. Epilogue: “Congratulations! You have defeated all of the enemy forces and have successfully invaded their planet, conquering another world for your almighty Inter-Stellar Empire!”
6. Game Over: “You have been defeated by your enemy, and have failed your people. They are now defenseless against the Aliens. Perhaps a new hero will emerge…”

Additional Features for Future Work:

* Add a high-scores list, with the ability for the player to add their initials, like old arcade games
* Add a continue feature? Allow players to restart from the beginning of current stage, if run out of lives?
* Re-design the “shield alien” enemy.
* Challenge Mode: Infinite enemies spawning continuously. Purpose is to stay alive the longest and/or get the highest score.
  + Generating random enemy spawns: Create a 2D matrix of a certain size that holds the object IDs of all the enemies. Each row of the matrix corresponds to a row of enemies that will be spawned on screen, so the rows should be deliberately planned so the enemy spawns make sense and are not just random, chaotic spawns.
  + Every ~10 seconds, randomly select a row from the matrix. Then use a FOR loop to step through each column of that row, creating an instance of the object contained in each spot.
  + Rows can contain different patterns of Infantry enemies, including “empty” spots. A row could contain just one single enemy, e.g. a Shielded Enemy. Or Fighters/Vipers that are spawned off screen and set on a certain path.