Final Project / Write up

Due Dates

- Final Drop
  - Wednesday - March 18 by 11:59pm
    - Final drop of your game in Perforce
      - Code + Video
      - Submission Report
    - Design Document
    - Turn in PDF to perforce
- Any questions?
  - Please ask questions to clarify any items you do not understand.
  - By NOT asking questions
    - I assume that you understand and are following the procedures correctly.
    - So please ask.

Video Capture

- Video
  - Need a 5-10 minute video demo of your project
    - Show case the features you completed
    - Demo and add commentary of your project
    - This is to show case your work
      - Be honest with what is working and not working
  - Post video to YouTube
    - Use any video capture tool you
      - Many free ones
      - Start discussion thread on options
    - ***Link to the movie inside the paper document***
  - Do not record the whole desktop
    - Restrict your recording to the area of interest
      - Code editor to show code
      - Window to show working demo
      - Saves space on movie
  - Audio
    - Test your audio
      - Make sure it is loud enough and easy to understand
    - Don't be nervous,
      - Everyone is awkward and weird in their own unique way
      - You listen to me, that's strange and goofy

- What to capture?
  - Demo the game to show off the features that you have complete
    - Look at the specification below
      - Highlight as many things as you can demonstrate
      - I will manually demo each demo as well, but the video really helps in case I didn't exercise a feature of the game.
      - These videos can be shared amongst the class
        - Be proud, you've done a great job!
    - For example,
      - Start the game from the select screen
      - Play several levels.
      - Die a few times
      - Update the high score
      - Return to the select screen and start again

Submission Report – Feature List

- Feature list is located in the submission report
  - Communicated the features completed / not completed from the report
    - see below for feature list
  - Link to the YouTUBE video

Documentation

- Engineering Design Documentation
  - Arrangement of design document (like a book)
    - Overall design / High level view
    - Problem / Component Discussions
      - Should discuss every Design Pattern used in detail
      - ***Minimum of 10 design patterns*** (must match YOUR code)
    - Post-Mortem
      - Improvements, Commentary
  - Discussion of all the major systems and the problem you are trying to solve
    - Each system (component)
      - UML of the system
    - Design Patterns Used in component
      - Roughly 2 pages for each Design Pattern
      - Diagramming and discussion
    - Descriptions of the interactions between components
    - Any discussion of trade-offs or problems you overcome
  - In general UML diagrams
    - Structural class diagrams are suffice (use visual studio for diagram – easiest)
    - Sequence diagrams (if needed)
  - How do you know if your wrote enough
    - This report should give:
      - A good understand of what you did
      - Impress a future employer

- ▪ Should be clear that you are an Software Architect
    - o Page length Expectations
        - ▪ 20-30 pages in PDF format
            - • Don't freak - UML diagrams take space
- • Format
    - o pdf format ONLY – please *NO* Word, Write, Google docs

Game Specification

This is the game specification that I'm using to evaluate your completed game. The goal is to have this game as close to the arcade version as possible, using design patterns and modern software architecture design philosophy. I'm using these videos as benchmarks to the original arcade version. When in doubt please refer back to these videos.

- • Arcade Reference:
    - o Best overall video
        - ▪ http://www.youtube.com/watch?v=VP2T3YlTDG8&feature=related
    - o Good arcade version working, you can see game play here
        - ▪ http://www.youtube.com/watch?v=437Ld_rKM2s&feature=related
    - o Additional game play
        - ▪ See the select screen (ignore or mute the commentary)
            - • http://www.youtube.com/watch?v=eHMxQUoKxDw&feature=related
        - ▪ Good end of game screens (ignore or mute the commentary)
            - • http://www.youtube.com/watch?v=aZAfWGEN3bw&NR=1
    - o High resolution
        - ▪ https://www.youtube.com/watch?v=iY1KTlKNE3M

Game Specification

- • **Stand alone game application**
    - o Create an game Application
        - ▪ Supply all
            - ▪ Art assets
            - ▪ Sound assets
            - ▪ Source and project Code
    - o Doesn't build or work – 0 for the coding project (YES -you fail the class)

- • **Select Screen**
    - o Instructions
    - o High score
    - o Points for each type of alien
    - o 1 or 2 player selection
    - o Credits (optional)

- **Game Cycle**
  - Game goes through the following cycles:
    - Select Screen
      - Instructions/points for each type of player
    - Select 1 or 2 player
  - Enter Game
    - Play game until player dies 3 times
    - Cycling between player 1 and player 2
      - If in 2 player mode
  - Game over screen
    - Update high score if it's a new high score
  - Select screen
    - Return to this screen

- **Game should be able to**
  - Complete at least 2 levels
  - Each level should get progressively harder
    - Initial states:
      - Alien grid position lower to the ground than previous level
      - Alien rate faster than previous level

- **Score**
  - Points are added as the player kills aliens or UFOs
  - High score is updated at the End of Game
    - If it's a new high score displacing the old one.
  - Individual Scores for each player displayed at top of screen

- **Player**
  - Display player icon / sprite
  - Movement
    - Keyboard
      - Right/Left keys
      - Fire missiles (space bar)
  - Number of lives
    - Initialized with 3 lives
    - Decays as player loses a life
    - Game over if last life dies
  - Launches one missile at a time
    - Ready to fire / re-fire only when the missile has a collision
  - Collision:
    - Missile hits shield
    - Missile hits Alien
    - Missile hits top of screen boundary
    - Missile hits UFO
    - Missile hits Alien Bomb
  - Sound effect on missile launch

- **Alien Grid**
    - Initialized in an 5x11 grid
        - Top row – squid
        - Middle 2 rows – crab
        - Bottom 2 rows – octopus
    - Grid moves horizontally right or left to screen edge
    - Grid moves down when it hits the screen edge and changes horizontal directions
    - Animated movement
        - Alien Sprites cycle between 2 images
        - Animation happens in unison
    - Speed increases as the number of sprites decrease
    - Aliens drop bombs randomly
        - Aliens can drop more than one bomb at a time
            - From the bottom Alien column
        - Individual aliens can re-launch bombs
            - If their respective bomb hits a shield, player's missile, or ground
        - 3 different types of bombs
            - Zigzag
            - Dagger
            - Rolling
        - Aliens can be destroyed by player's missile
            - Resulting collision – deletes alien sprite
            - Animation effect of the death
                - Points awarded
    - Deleted aliens affect the grid movement
        - When the outside column of aliens are destroyed,
            - the movement of the grid has greater range in the horizontal direction
    - Alien collision with player's missile can happen from the side as well as vertically
        - Aliens can effectively move horizontal into a player's missile
    - Killed aliens had the respective points to the player's score
    - Marching sound effects happen when the aliens are moving
        - Music tempo changes as the grid moves faster
            - Adding to the mode and suspense to the game

- **UFO**
    - Launches at random intervals
    - Moves horizontally at top of screen in the right or left direction
    - Launches one bomb at a time
        - Similar to the aliens
        - Until a collision happens
        - Bomb sometimes looks like a tuning fork
    - When flying, unique sounds play while the UFO is on the screen
        - Sound loops while UFO is on screen
            - Very annoying/stressful effect
    - Explosion sprite animation when the UFO is killed

- o   Player score is updated with the appropriate points

- **Missile / Bombs**
    - o   Can only launched one at time from their respective player, alien or UFO
        - ▪   Animated effect as it is moving
    - o   Missiles and Bombs can hit and kill each other
    - o   Bombs dropping
        - ▪   3 different Modes - see thread on missile falling
            - ▪   Zig-Zag
            - ▪   Dagger
            - ▪   Rolling
        - ▪   You must show at least 3 different types of bombs

- **Shields**
    - o   4 shields on the screen
    - o   Shields can impede player's missiles from traveling towards aliens
    - o   Shields can protect player from alien bombs
    - o   A hole can be effectively "drilled" through the Shield
        - ▪   Allowing alien or UFO's bombs or player's missiles to pass unimpeded
    - o   Multiple hits creates a holes in shield
        - ▪   Test creating a through hole on the edges of the shields
        - ▪   Test creating a through hole in the middle region of the shield
    - o   Shields can be 100% completely dissolved by combination of missiles and bombs
        - ▪   Allowing missile or bombs to fly through unimpeded
    - o   Graphical effects
        - ▪   Erosion of the shield should "appear" to have dissolve effect
        - ▪   Pseudo random dissolve effect

- **Sounds**
    - o   Audio of the aliens marching
        - ▪   Lock step with the alien movement
        - ▪   Cycles through 4 sound effects
        - ▪   Goes faster as the aliens go faster
    - o   Types of sounds
        - ▪   Missile firing
        - ▪   Collisions (missile hitting objects)
        - ▪   Death sound effects
        - ▪   UFO
    - o   Sounds can be overlapping