ICS3U/C - Final Programming Project

- Create a video game in Pygame using the programming and problem solving techniques introduced in this class; including variables, conditions, loops, lists, functions, and libraries.
- There are a number of options for this final project, with varying levels of difficulty and reward.
- You may use the sample code provided in the Repl classroom to help you develop your project.
- Of your final mark, this project is worth 10% for ICS3U students, and 15% for ICS3C students.
- The marks you attain in the rubric will be ***multiplied by the percentage score*** you earn below, based on the features you implement in your game.
- The maximum percentage you can attain is 120%.
- You will submit your ***code*** and all its ***image/sound files*** on Repl, which will be later downloaded by your teacher for evaluation.
    - You must also submit the ***specifications you accomplished "X"-ed off***, in a .txt file.
- You must also update your ***development log*** on a continual basis.
- It is strongly recommended that you ***download Pygame*** to your computer. If you're having trouble with this, please see your teacher.

Compulsory Requirements	***Elective Requirements***
70% maximum (80% maximum for 3C): ❏ Regular submission ***80% maximum (90% maximum for 3C):*** ❏ How to play instructions ❏ Scoring mechanism ❏ Play-again mechanism ***90% maximum (100% maximum for 3C):*** ❏ All the above ❏ Collision detection ❏ High score listing and ranking ❏ Multiplayer ***95% maximum:*** ❏ All the above ❏ Any one of the medium or hard bonuses ***100% maximum:*** ❏ All the above ❏ Another medium or hard bonus	***Easy Bonus (1% addition to the maximum):*** ❏ Controller / Joystick *(Doesn't run on Repl)* ❏ Music / Sounds *(Doesn't run on Repl)* ❏ Seek/flee AI steering behaviour / trigonometric rotation ❏ Any other low-tier accomplishment* ***Medium Bonus (2% addition to the maximum):*** ❏ Intro menu with four functioning buttons ❏ Visual effect (i.e. motion blur, mirror effect, light/shadow effect, etc.) ❏ Power-up mechanic ❏ Particle emitter ❏ Linear 2D Physics ❏ Linear interpolation ❏ Pursue/evade AI steering behaviour ❏ Rotation matrix multiplication and vectors ❏ Any other mid-tier accomplishment* ***Hard Bonus (5% addition to the maximum):*** ❏ CPU Competitors ❏ "How to play" tutorial level ❏ Rotational 2D Physics ❏ Path-finding (Dijkstra, A*) ❏ Linked-lists ❏ Flocking AI behaviour ❏ Spline interpolation ❏ Forward kinematics ❏ Any other high-tier accomplishment*

*What qualifies as low, mid, or high tier, is up to the discretion of the teacher.

Rubric

	1	2	3	4
Program Execution ***Knowledge/Understanding***	Program hardly executes chosen specifications, and is ridden with errors.	Program somewhat executes chosen specifications. Has a notable amount of errors.	Program executes chosen specifications, but with a few errors.	Program ***effectively*** executes chosen specifications without any errors.
Algorithms & Data Structures ***Thinking/Inquiry***	Program code is ineffective, irrelevant, repetitive and inefficient.	Program code is effective, however repetitive and inefficient.	Program code is effective, relevant, concise, and efficient.	Program code is effective, relevant, ***preferable***, concise, and ***highly*** efficient.
Comments, Documentation, and Naming Conventions ***Communication***	Documentation and comments are sparse. Naming conventions are completely ambiguous.	Documentation, comments, and naming conventions are vague; and have minor spelling and grammar issues.	Documentation, comments, and naming conventions are clear and detailed; without any spelling or grammar issues.	Documentation, comments, and naming conventions are clear and ***concise***. No spelling nor grammar issues.
Game Design and User Interface ***Application***	Game is frustrating and hardly playable. User interface is inconsistent and confusing.	Game is playable, and user interface is usable and consistent.	Game is fun, and user interface is straightforward and understandable.	Game is ***very*** fun, and user interface is eloquent and easy to use.