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| Code Review Report |
| Project Summary |
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| Report Date | Project Name | Student Name / Number | Code Reviewer |
| 06/12/2023 | Boid Mechanics | *Billy Foulger – s4205123* | *Josh Brown* |

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| Project Summary |
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| **An attempt to replicate the kinds of flocking and steering** **behaviours that can be seen in the wild through animals such as sheep, fish or birds. This was undertaken in unreal and** **utilised C****++.** |

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| Unit Testing |
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| Test Summary | Test Steps | Expected Result | Actual Result | notes |
| Change Number of Boids to Spawn | Alter Slider to change the number of Boids to spawn  Press Spawn Boid Button | Remove Current Boids  Spawn in new Boids | If the slider was increased, the current Boids remain the same, and new ones are added |  |
| Trying to Re-Open Settings Menu whilst Closing it | Close Settings Menu  Press ‘M’ to try and re-open mid-animation | The Settings Menu should not open until the animation has finished | The Settings Menu only re-opens once it has fully closed |  |
| Does changing the size of the Debug Box constrain the Boids | Draw Debug Box  Alter Size of Debug Box | Boids are constrained to the size of the debug box | The Boids can venture a small distance out of the Debug Box a force pulls them back in |  |

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| BUG Tracking LOG |
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| Bug Details | STEPS TO Reproduce | DATE Found | Date Resolved |
| Boids were freezing at certain points | Play the Simulation and eventually it will freeze | 28/11/2023 | 29/11/2023 |
| Obstacles Crash the Simulation | Play the Simulation – Alter Obstacle Slider – Spawn Obstacles | 02/12/2023 | 05/12/2023 |

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| Conclusions/Areas for further expansion |
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| ***Overall, the project went well with the only improvements that I would wish to make would be that the dynamic obstacles either actively seek out the Boids or instead are able to use values from the Boid manager to allow the obstacles to be constrained as to where they can travel.*** |

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| Project Checklist – (For Code Reviewer to fill in) |
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| task | notes |
| *What is the code supposed to do, and does it accomplish it? (Is the code easy to understand?)* | Contains a Boid Manager that contains multiple parameters that can be changed in the UI. These parameters affect the Simulation in multiple ways, predominantly steering and flocking behaviours. This has been achieved and accomplishes its intended goals. |
| *Can this solution be simplified? (How?)* | Some Code has been repeated in functions and could be simplified by creating separate functions and calling them multiple times in the code |
| *Can this solution be improved in terms of maintainability, readability, or performance?* | Yes, the readability can be improved by adding more comments so that I can tell what’s going on and also implement more functions so the code is more maintainable for future development. |
| *Is the code modular enough? How reusable is it?* | Yes, as there are some functions that can be re-used in the future to reduce development time. |
| *Are there any best practices or design patterns that could improve this code?* | No, there doesn’t seem to be any that will further improve this code. |
| *Does this code adhere to Object-Oriented Principles, like the Single Responsibility Principle?* | Yes, there are principles that have been followed such as Classes and inheritance |
| *Can you think of any use case in which the code does not behave as intended?* | No, I cannot think of any other use cases where the code behaves abnormally |
| *Are debug-logs user friendly?* | Yes debug-logs are informative |
| *Does the code contain user friendly comments or documentation? (Is it up to date?)* | The Comments are user-friendly; however, they are not descriptive enough to understand entirely what is going on in some areas of code |
| *Does the code make use of user data in a way that might raise privacy concerns?* | No, there are no privacy concerns raised in the data be used |
| *Is the code ethical? Does it exploit behavioural patterns, introduce bias, or have the potential to cause harm?* | The Code is ethical and doesn’t introduce any bias |
| *Is the code testable? If so, what automated tests have been added?* | The code is testable and has automated tests such as Boids avoiding obstacles as well as each other. |
| *Are there portions of code that aren’t covered in testing?* | No, every portion of code was covered in testing |
| *Were any parts of the code confusing or difficult to understand?* | Some areas of code were difficult to understand due to little comments |
| *Any final comments or feedback:* | The Code layout was organized and efficient as it made good use of functions in most areas and even assigned the UI Parameters in code. Additionally, multiple classes were used to help split up the functionality of the Simulation |
| *Signature/Date:* |  |