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| **MAT301 / CMP304 Coursework**  **Project Report (50%)**  **Title** |
| Instructions:  - This is a template that you should use to complete your assignment report.  - Please read the assessment brief document before attempting this.  - The gray text is meant as guidelines. You are to replace it with your own.  - You may add subtitles as you see fit.  - Delete this instructions part and any gray text before submission.  - After you complete this report, save it as a pdf, and submit it along with the demo video and your application .zip file.  - Word count target should be around 2500 words. However this is not a hard limit and you can go over or under as required. |
| **By: Rowan Ruthven - 1802152** |

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| **1. Introduction (5%)** |
| Relevant overview properly setting the context of the project.  This AI project simulates a guard, similar to those seen in stealth games, patrolling the streets and responding to alerts. The simulation is built in Unity, using C# scripts, to compare the Finite State Machine and Behaviour Tree AI structures.  In the scenario, both the red guard and the blue guard have the same goal: to find the yellow targets in the scene and destroy them. Their standard patrol takes them around the scene in a repeating loop until either they detect a target or an alert is created in the scene (created by the user with mouse button inputs).   * Hypothesis: Finite State Machine will be more efficient due to the small scale of the AI structure, but would become less efficient if the AI became more complex |
| **2. Methodology (15%)** |
| * Hierarchical FSMs |
| **3. Results (10%)** |
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| **4. Conclusion (10%)** |
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| **5. References (5%)** |
| <https://gamedevelopment.tutsplus.com/tutorials/finite-state-machines-theory-and-implementation--gamedev-11867>  <https://towardsdatascience.com/hierarchical-finite-state-machine-for-ai-acting-engine-9b24efc66f2>  <https://www.techopedia.com/how-is-a-finite-state-machine-used-in-artificial-intelligence/7/33998> |

Structure, style, formatting, spelling, grammar, coherence (5%)