Learner Number	Learner Number	**Learner Name**	Learner name
Unit code	ICTGAM404 ICTPRG415 ICTPRG405	**Unit name and release number**	Apply artificial intelligence in game development (1) Apply skills in object-oriented design (2) Automate processes (1)

Assessment Instructions	**This is assessment event number** insert event number **of** insert total number of events for this unit
Assessment overview	This is a practical assessment. You must satisfactorily complete the following tasks/activities: 1. Determine, Design and Document the required elements and functionality of AI Behaviours 2. Build the AI Behaviours according to assignment requirements and documented designs 3. Test, Document and iterate until results meet requirements
Learner must provide	Portable USB for version control and storage of project.
Assessor must provide	A simulated work environment, Documentation Template
What do I need to do to achieve a satisfactory result?	All criteria for each task must be addressed to successfully complete this assessment event. Refer to assessment criteria on the following page. • No errors in code • Commented code • Completed Design Document
Time allowed	4 weeks
Assessment feedback, review or appeals	Feedback must be provided to the you no later than 10 days after all assessment activities have been conducted. If you want a review of your results or if you have any concerns about your results, you can contact the teacher/assessor or your Head Teacher. You have three weeks from the date you receive your results in which to make an appeal and/or request a review. You should receive a response within ten days of the receipt of the request. Teachers and their Head Teacher will address any appeal in accordance with Assessment Guidelines for TAFE NSW.

Task 1: Plan and Design then Build AI using Polymorphism and Inheritance

Students are required to design and build a complex AI system using Inheritance and Polymorphism according to these requirements.

Requirements:

- Create parent Class for all 'Life' hostile and friendly AI
- Create Classes that inherit from the parent class and split off into at least 2 types of AI
  - Predator
  - Prey
- Predator AI such as Wolves should have the following behaviours
  - Wander around a territory
  - Seek prey
  - Attack
  - Collision Avoidance
  - Offset Pursuit
  - Search
- Prey AI such as Sheep or Deer should have the following behaviours
  - Flock
  - Wander
  - Evade
  - Hide

AI should change state and interact correctly when interacting with other AI.

Task 2: Document

Students are to use a template provided to design what each of these AI's will look like and how they will achieve the required functionality. Required Documentation elements are:

- Research Terminology used when creating AI
- Research types of behaviours in AI within different genres of games relevant to these behaviours
- Develop class diagrams to show how inheritance and polymorphism will work in the system
- Develop state diagrams for behaviours
- Identify generalisations within classes
- Identify specialisations within classes
- Create UML diagrams to show classes and states
- Develop behaviour algorithms
- Pseudo Code and UML Diagrams for functionality of behaviours
- Write Algorithms for flocking behaviours
- Design tests for behaviours

Task 3: Build

Students are required to concept their systems using UML diagrams.
Design a simple state machine to handle both the behaviours and animations to show the states.

Task 4: Test, Document and all Iteration through out production
Throughout production students are required to build, test and keep a production journal inside their documentation explaining issues and fixes through the iteration of the product.
Task 5: Submit functioning project files and project build
Students must submit the following things to the student moodle and make sure their project ticks off the following checklist according to industry standards. **Submit the following to moodle** • Link to Project files (hosted on GitHub repository) • Zipped Build of project • Completed Documentation **Make sure you have:** • Clear Regions, Headers and Code Comments • Namespaces and Component Menu names • No errors (Warnings are fine) • At least 4 types of GUI elements (Buttons, Sliders etc) • UML Diagrams • Description of each state • Research on AI

Make sure you have written your name on each page of any document/template you have filled in as part of this assessment, before submitting to your teacher/assessor for marking