KEY IN-CLASS STUDENT ACTIVITY 1.5: UNDERSTAND COMPONENTS

Lesson Objective 1.5:

Understand components. Topics: differentiate between tool creation and game programming, understand artificial intelligence (AI).

Resources, software, and additional files needed for this lesson:

1. None

Guiding questions:

1. **What is the difference between tool creation and game programming**? A tool is a specialized application used to make an aspect of a game, such as a map or level. A tool is programmed mainly for content creation and used in conjunction with existing programming tools and environments. A tool differs from game programming in that game programming results in a game, but a tool results in an application that creates parts of games.
2. **What is AI?** The subfield of computer science concerned with the concepts and methods of symbolic inference by computers and symbolic knowledge representation for use in making inferences. AI can be seen as an attempt to model aspects of human thought on computers. It often is used in algorithms that control character behavior.

Student activity:

Directions to the student:

Read the following scenario and respond to the situation presented. Verify your answers with the instructor. Request assistance from the instructor as needed. Share your ideas with the class.

Scenario:

Amazing Maze is a game in which the player must avoid being tagged by enemies while striving to reach the end of a maze. The designers are hoping to build in many aspects of AI that will make this a blockbuster game.

Content:

Design an AI to control the enemy movement by addressing the following aspects: vision, communication with other enemies, reaction time, searching, and memory. The enemy AI should pose a plausible and surmountable challenge to the player. Consider vision, group communication, reaction time, searching, and memory.

Sample Answer: (Answers may vary)

Vision: An enemy can see in front of them for only a certain distance. If they see the player within their range, they will move towards the player and match his or her movements until the player is caught or the player has moved out of their range or line of vision.

Group communication: If two or more enemies see a player, one will stop while the other moves toward the player in an attempt to trap the player.

Reaction time: The enemy will wait half a second before moving towards a player within their range of vision so that the player has time to get away.

Searching: Each enemy will make random turns when encountered with a choice of where to go, and also decide randomly to reverse direction.

Memory: The enemies will remember what turn they took at a given intersection and if they get to that intersection again, they will make a random choice from the remaining choices that have not been explored.