

AE12.6 Moving Enemies/ Objects**Objectives:**

- SWBAT collaborate with a partner on a larger programming project.
- SWBAT use the Java programming language to create back-end logic and front-end graphics for a playable game.
- SWBAT write a method to move enemies/objects in the game grid each cycle.

Type of AP Computer Science A Content:

- Primitive Types
- Using Objects
- Boolean Expressions
- Iteration
- Writing Classes
- Array
- ArrayList
- 2D Arrays
- Inheritance
- Recursion

Computational Thinking Practices

1. Program Development and Algorithm Design
2. Code Logic
3. Code Implementation
4. Code Testing
5. Documentation

Focus Vocab:

- “AI” - the artificial intelligence given to a enemy or object in your game to determine it’s next move
- “Cycle” - the check for execution of all commands multiple times per second

Key Questions:

- “What types of objects or enemies appear on the screen in your game?”
- “What will determine the movements of the objects/enemies each cycle of the game?”

Project Resources Needed:

- [Instructions Document](#)
- [Guided Videos](#)
- [Team Slack Communication with Teacher](#)
- Starter Code on [REPLIT](#)
- Student Computer with Software Installations

Project Grouping:

- Student survey provided for students to share the type of game and desired partners for project

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- Students given the option use the grid-based Java Game starter code OR find another Java project on GitHub and build off of it

Activity #1: WarmUp

- Project Groups sit together in the classroom
- Project groups check their most recent Slack messages from each other and the teacher
- Project groups should update the "[Java Game Checklist](#)"
- Project groups should write a Slack message indicating, "What work will each person accomplish today?"

Activity #2: Project Group Check-Ins

- Students should "pull" the most up-to-date code from their GitHub repository
- Students should work together to make the needed progress in their game
 - Do they have a plan for their game art resources?
- Teacher will respond to project Slack messages
- Teacher will do a quick check-in with each group, helping troubleshoot any issues shared
- Priority given to helping each group catch up to the expected pace:
 - Any Git Merge conflicts
 - Initial Code Edits
 - User Input Keys/Mouse
 - Populating Objects/Enemies

Activity #3: Live Code Demo

- Use the Example Student Account to walk through some of the major code challenges for the `scrollLeft()` method
- Review how to loop through just ONE column (or row) in a 2D array
- Typical Error: Students write the for loop from left to right, which will duplicate the same object instead of moving left

Activity #4: Project Group Check-Ins #2

- Follow up with project groups on today's coding progress

Activity #5: Conclusion

- All students should commit & push code to GitHub repo BEFORE leaving their coding session
- Each student should complete an [Exit Ticket](#) to provide feedback about:
 - resources being used
 - Current challenges

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- Students are able to decide on a project that fits their interests
- Students receive 1-on-1 support during class time and after-hours on Slack to fit different student pacing
- All projects should include basic elements, but students should develop games in directions that most fit their interests and skills (ie. game artwork resources, images, sounds, animations, extra screens, etc.)

Assessment:

- Formative Assessments:
 - Classroom Check-Ins
 - Slack communications
 - Exit Tickets
- Summative Assessment
 - Project Rubric
 - STEM Project Showcase (Date in June TBD)