Final Project	Time Frame: 1-2 weeks
Project Goal: Students will use the skills and concepts they learned during the mission pack "Python with Robots" to create their own project. **Project Outline:** Follow the five-steps of the design process to design a final project.	**Assessment Opportunities** ● Final project planning document ● Final Project Checklist ● Peer reviews / Gallery walk ● Final Project Rubric ● Submit Final Program ● Student Reflection ● Project presentation or report

Remix Ideas:
- Create a new element to a game, like using data from sensors or the accelerometer to control an element on the screen or affect the score.
- Create a new game, like "Simon Says" or "Concentration" or "Family Feud".
- Create an interactive story, with pictures and sound and several possible choices.

Materials Provided:
- A lesson plan for students
  - This original document can be given to students to explain the project and requirements.
- A planning guide for students
  - This planning guide is similar to the remix planning guides for the other projects. It has been modified for the final project. It can be modified as needed to meet your specific requirements.
- A CSTA Standards-based rubric
  - This rubric assesses several CSTA standards at three levels, including collaboration
- A sliding scale rubric
  - This rubric assesses the same CSTA standards, but they are not specifically identified. It also includes some additional standards, mentioned below. It uses a sliding scale for assessment instead of three levels.
- A daily reflection form (MS Forms, can be duplicated)
  - This is a multi-day assignment. Students should reflect daily on their progress. The form is a suggestion of reflection questions but can be modified to meet your specific needs.
- A Kahoot for reviews of Mission 15 & 16 (vocabulary and coding and concepts)
  - Reviews for all units are available
- An exam that covers Mission 15 and 16 (vocabulary and coding and concepts)
  - Exams for all units are available. This exam can be given BEFORE the final project.

Teacher Notes:
- You can decide what materials you want to use for the final project.
  - Lesson plan or planning guide or both? Or create your own final project document. Maybe you want to have students do a specific step in class with discussion. Or it may be self-paced.
  - Decide on a rubric for the final project. Two different rubrics are provided.
  - Since this project will take several days, students should do a daily reflection on their progress. A form is provided.
  - If you want to review concepts throughout the project, you can use the Kahoot reviews.
- An exam on vocabulary and coding & concepts from Unit 5 (Mission 15 and 16) is provided. You might want to give the exam before the final project.
- The lesson plan and planning guide suggest the students give a presentation about their final program. The suggestion is to create a slideshow that highlights specific parts of the program. You can modify the requirements, or change them all together.
- If you are an AP or high school teacher, you may want to include specific writing prompts as part of the final project. Please note: If feedback of any kind is given by anyone other than their peers to the student on this project, it cannot be used as the Create Performance Task .

A Note about Computer Science Standards:
- Most state and national computer science standards include **teamwork and time management**. Use the final project as an opportunity for teamwork, leadership roles, electronic communication and managing a project. Review the computer science standards for your state and grade band, and incorporate them into this project. CSTA Standards are listed below.
    - *Grades 6-8*
    - 2-AP-18: Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.
    - 2-IC-22: Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.
    - *Grades 9-10*
    - 3A-AP-22: Design and develop computational artifacts working in team roles using collaborative tools.
    - 3A-AP-27: Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.
    - *Grades 11-12*
    - 3B-AP-20: Use version control systems, integrated development environments (IDEs) and collaborative tools and practices (code documentation) in a group software project.
- Most state and national computer science standards also include **evaluating computational artifacts**. Use the final project as a point of discussion for the global impact of computers. The standards are listed below to help guide class discussions, written prompts, project requirements, etc.
    - 2-IC-20: Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.
    - 2-IC-21: Discuss issues of bias and accessibility in the design of existing technologies.
    - 3A-IC-24: Evaluate the ways computing impacts personal, ethical, social, economic and cultural practices.
    - 3A-IC-25: Test and refine computational artifacts to reduce bias and equity deficits.
    - 3B-IC-25: Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.
    - 3B-IC-26: Evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society.
    - 3B-IC-27: Predict how computational innovations that have revolutionized aspects of our culture might evolve.