Unit 7 Lesson 1

Programming: Graph Paper Programming

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Unit 7 Lesson 2

Introduction to Online Puzzles

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Unit 7 Lesson 3

Building a Foundation

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Unit 7 Lesson 4

Debugging in Scrat

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Loops: My Robotic Friends

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Unit 7 Lesson 6

Loops in Artist

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Nested Loops

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Nested Loops in Frozen

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Beyond Programming: The Internet

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Digital Citizenship: Practicing Digital Citizenship

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Digital Citizenship: Screen Out the Mean

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Events: The Big Event

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Events in Star Wars

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Events with Flappy

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Events in Bounce

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Unit 7 Lesson 16

Conditionals: Conditionals with Cards

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Unit 7 Lesson 17

While Loops in Farmer

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Unit 7 Lesson 18

Conditionals & Loops in Maze

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Unit 7 Lesson 19

Conditionals in Minecraft

Resources

Unit 7 Lesson 20

Conditionals & Loops in Farmer

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Unit 7 Lesson 21

Variables: Envelope Variables

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Unit 7 Lesson 22

Variables in Artist

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Unit 7 Lesson 23

Variables in Play Lab

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For Loops: For Loop Fun

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For Loops in Bee

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For Loops in Artist

Resources

Unit 7 Lesson 27

Functions: Songwriting with Parameters

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Functions in Bee

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Unit 7 Lesson 29

Functions with Parameters in Artist

Resources

Unit 7 Lesson 30

Functions with Parameters in Bee

Resources

Unit 7 Lesson 31

Explore Project Ideas

Resources

The Design Process

Designing software means solving lots of little problems, all the time. The main problem in software design is what to create in the first place.

This process is useful for all kinds of things, but we are going to focus on using it for app design.

- **Define**
  - What kind of app would you like to create?
  - What are your constraints?
  - What does success look like?
- **Prepare**
  - Brainstorm / research possible elements
  - Compare pros and cons
  - Make a plan
- **Try**
  - Put your plan into action
- **Reflect**
  - How do your results compare to the goals you set while defining the app?
  - What can you learn from this or do better next time?
  - What new problems have you discovered?

What it Looks Like

Over the course of the next several weeks, you will have the opportunity to experiment with some existing games and design your own game based off of what you have learned. After creating your game, you will get the chance to present it to others and receive feedback. These steps are all critically important in the software industry, and getting practice with the elements of the design process will help you create better products more efficiently. Here is what the coming weeks will hold as we learn more about the design process.

1. **Define & Prepare**
   - Play existing games to get ideas and understand limitations
   - Brainstorm and plan your new or modified app
2. **Try**
   - Follow your plan to build an app
3. **Reflect & Edit**
   - Swap apps with another group to help make your projects better
4. **Present**
   - Show off your final product!

Handout

Final Project Design Worksheet

Use this worksheet to make sure you are following the right steps to get your final project completed correctly and on time. If more space is needed for answers, you can use the back of the paper.

Day 1: Define & Prepare

Time to plan the details of your final project!

Section A: Determine your project style

1) What type of project will you be creating?	**Play Lab** *(skip section B)* or **Artist** *(skip section C)*
2) Do you want this to be a showcase piece or an interactive game?	**Showcase Piece** *(skip section D)* or **Interactive App** *(skip section E)*
3) Is your project a remix or brand new? (If remix, add URL of original)	
4) Describe in three to five sentences what your project will be.	

Section B: Artist Project

1) Will your drawing be a planned, detailed image which is the same each time, or change each time it's run?	
2) If your drawing stays the same each time it's run, what is the design you are trying to build, and why does it make an interesting project? (More room on back of sheet.)	

Final Project Design Worksheet

3) If your drawing changes each time it is run, describe why it changes and how the program will make that happen.	

Section C: Play Lab Project

1) How many characters will your game have?	
2) Will your app be a story that plays the same way each time it is run, or is it meant to change each time?	
3) If your app is a story that runs the same way each time, describe the story it will be telling and the scene where it will take place.	
4) If your app is meant to change each time it is run, describe why it changes and how the program will make that happen.	

Handout

Final Project Design Worksheet

Section D: Interactive App

1) In what way does your app require audience interaction?	
2) For this type of app, you must use at least two of these suggested items. Circle the items you think you will use and describe what you might do with them. (5th grade concepts in red)	• Random • Conditionals with both `if` and `else` • Nested Loops • Functions • Variables • Ask Block • For Loops

Section E: Showcase Piece

1) For this type of app, you must use at least two of these suggested items. Circle the items you think you will use and describe what you might do with them.	• Random • Functions • Nested Loops • Variables • For Loops

Handout

Final Project Design Worksheet

Day 2: Try

Coding day! Be sure to refer back to your table from day 1 to make sure your finished product represents the project that you said you were going to make.

Section F: What is going well?

1) What parts of your project are turning out just the way you thought they would?	
2) What are you learning about the concepts or blocks that you're using?	

Section G: What is not going well?

1) Is there anything that you planned to do that you needed to change? Why did you need to change it?	
2) Are there any blocks or concepts that you don't understand how to use? Which ones?	

Handout

Final Project Design Worksheet

Day 3: Reflect and Edit

Time to make your project the best it can be. Pass this sheet to a classmate, then have them try your app and fill out the boxes below. Your classmates will have 20 minutes to review your app, then you will have the rest of the class period to fix any issues that they found.

Share your project URL:

Section H: The app in general

1) What do you like about this app?	
2) Is there anything about this app you don't understand?	
3) Name two things you might change about this app if you were the one creating it.	

Handout

Final Project Design Worksheet

Section I: Assessing the app

1) Does the app match the description from day 1?	
2) Does the app use at least 2 of the concepts from the required category?	
3) Does the app feel like it was well-planned?	

Handout

Final Project Design Worksheet

Day 4: Present

Great computer scientists need to be able to show off their accomplishments. It's time to present your work.

Share your project URL:

Section J: Describe your work

1) Why did you decide to create this specific project?	
2) What does your project do?	
3) Which of the required ideas did you use, and how did you use them?	

Handout

Final Project Design Worksheet

Section K: Reflect on the process

1) What did you learn in creating this project?	
2) What was the most challenging part about this experience? How did you overcome that challenge?	
3) What part of this experience was the most fun?	
4) Describe a time that something did not go as planned and you had to be persistent to get everything to work out in the end.	

Final Project Design Worksheet

5) Is there anything that you would try to change if you had extra time?	
6) How well did you and your partner/team work together? Were you able to make compromises in order to end up with a project that you were both happy with?	
7) What else do you want people to know about your project?	

Unit 7 Lesson 32

The Design Process

Resources

Unit 7 Lesson 33

Build Your Project

Resources

Unit 7 Lesson 34

Revise Your Project

Resources

Unit 7 Lesson 35

Present Your Project

Resources