Access Academy

AMERICAN PRINTING HOUSE

On the Road to Code 1

CodeQuest

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Objectives

1. Reinforce VoiceOver gestures: tap, split tap, drag, swipe, picker
2. Build vocabulary for coding concepts:

   Sequence: putting steps in an order: First, Second, Third, Last

   Debug: finding an error and fixing it

   Loop: an action that is repeated
3. Practice math skills of counting, problem solving, and grid coordinates through planning out the astronaut's path to the ship counting the right number of spaces and avoiding the wrong way.

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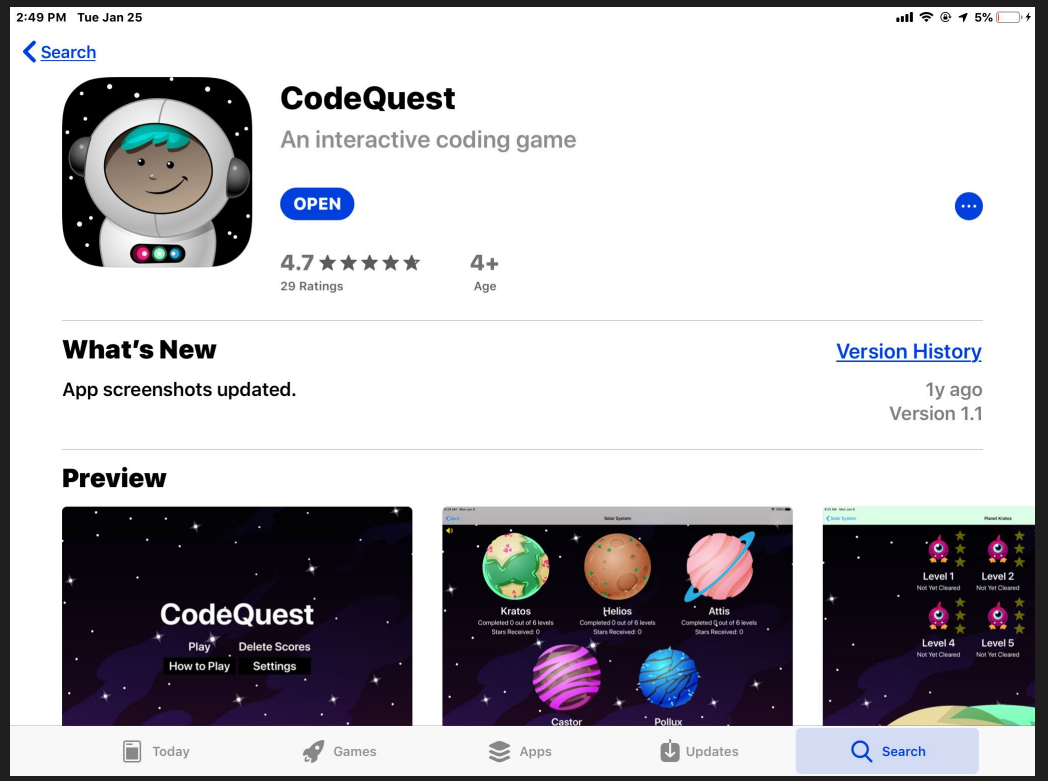
Play Along with Us!

- With an iPad
- Go to the App Store
- Search and download
- It’s FREE!



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Poll Question

What is your comfort level with Coding and Coding Concepts?

1. Excited, but don't know where to start
2. Interested, but a little overwhelmed
3. Very comfortable and ready to go
4. Not comfortable, but I want to support an interested student

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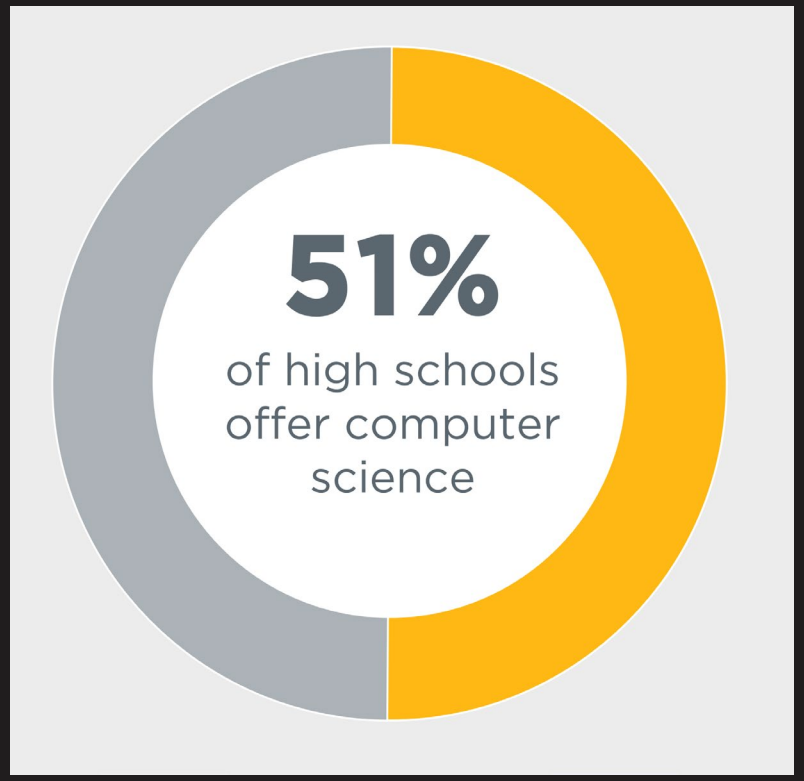
Why Computer Science?

- Major part of our lives
- A need for diversifying the field
- Job opportunities
- It’s fun

-Code.org



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Benefits of Computer Science:

- Beyond computing
- Improved problem-solving abilities
- Future of work and active citizenship.
    - Vegas and Fowler 2020, Brookings Institution

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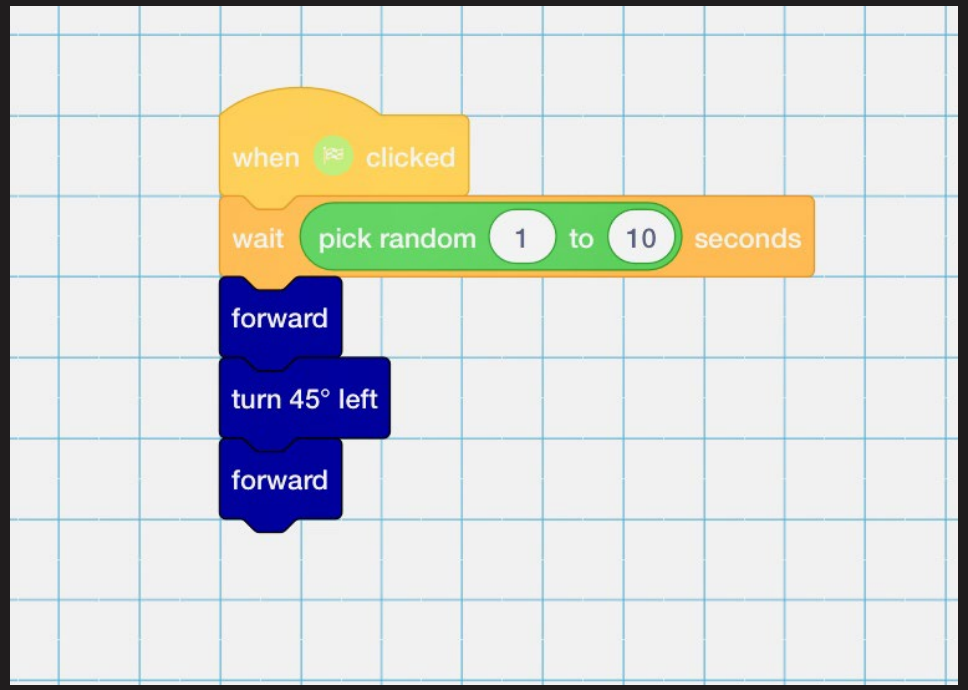
What is Coding?

- Language
- Instructions
- Commands



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Coding for Students who are BVI

- Most coding apps for kids are not accessible with animations
- Block language
- Access to same learning opportunities as peers
- Career interests and opportunities

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The App

CodeQuest

Background of CodeQuest

- CodeQuest started by Diane Brauner
- At the University of North Carolina
- APH field tested, modified, and released the app in the App Store.
- APH added embossable grid layouts for all the levels

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Transferable Skills

- Reinforce O&M skills with route planning
- Build confidence with math concepts of grid, rows, and columns
- Practice iPad gestures

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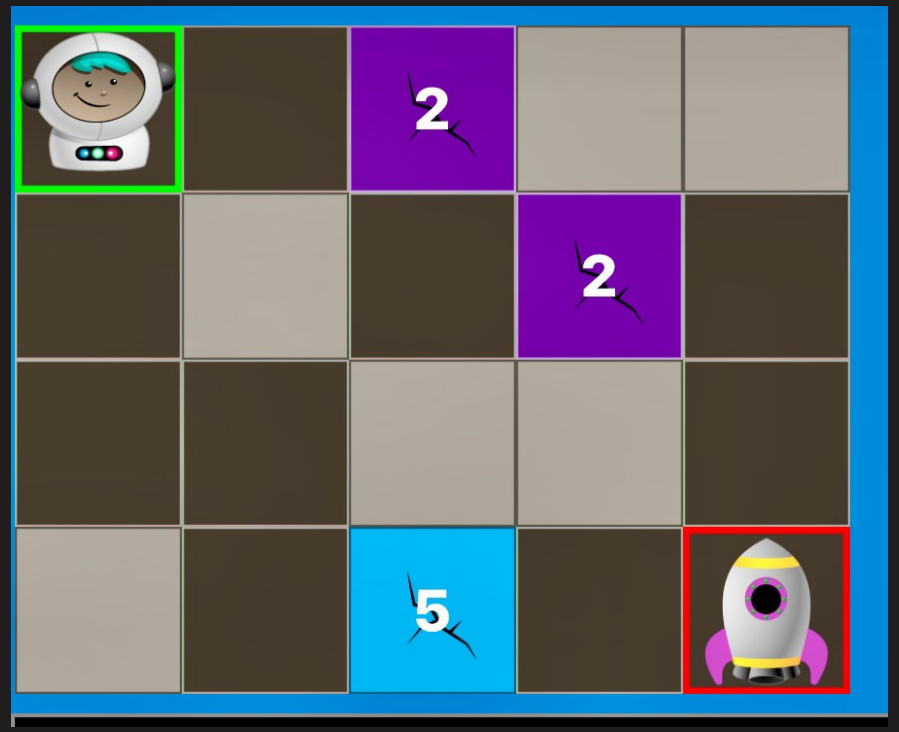
O&M Skills

- Looking down on the map of the astronaut's route
- We want the shortest path
- The map is laid out on a grid



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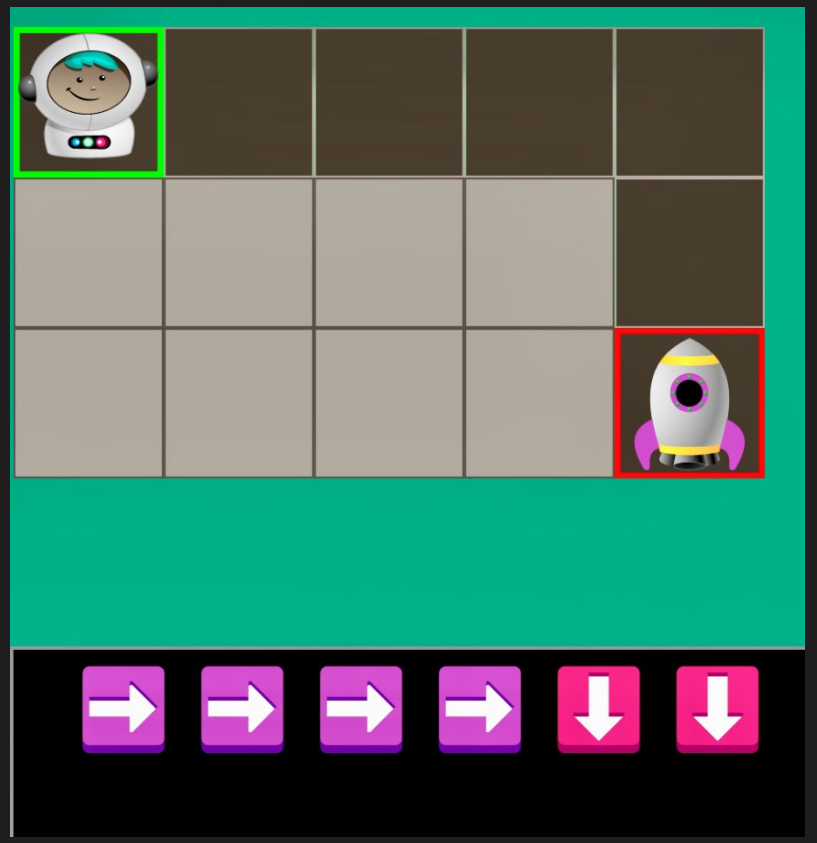
Math Concepts-What is a Grid?

- Rows from left to right
- Columns from top to bottom
- Find the coordinates



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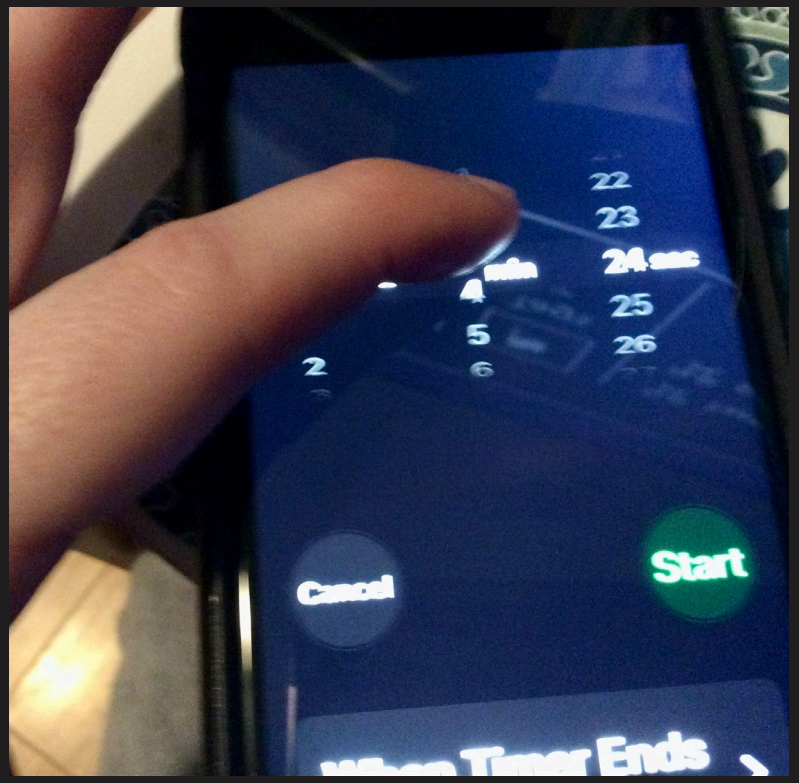
iPad Skills

- Tap
- Double tap
- Split tap
- Swipe
- Drag
- Picker



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Let’s Play!

You can follow along

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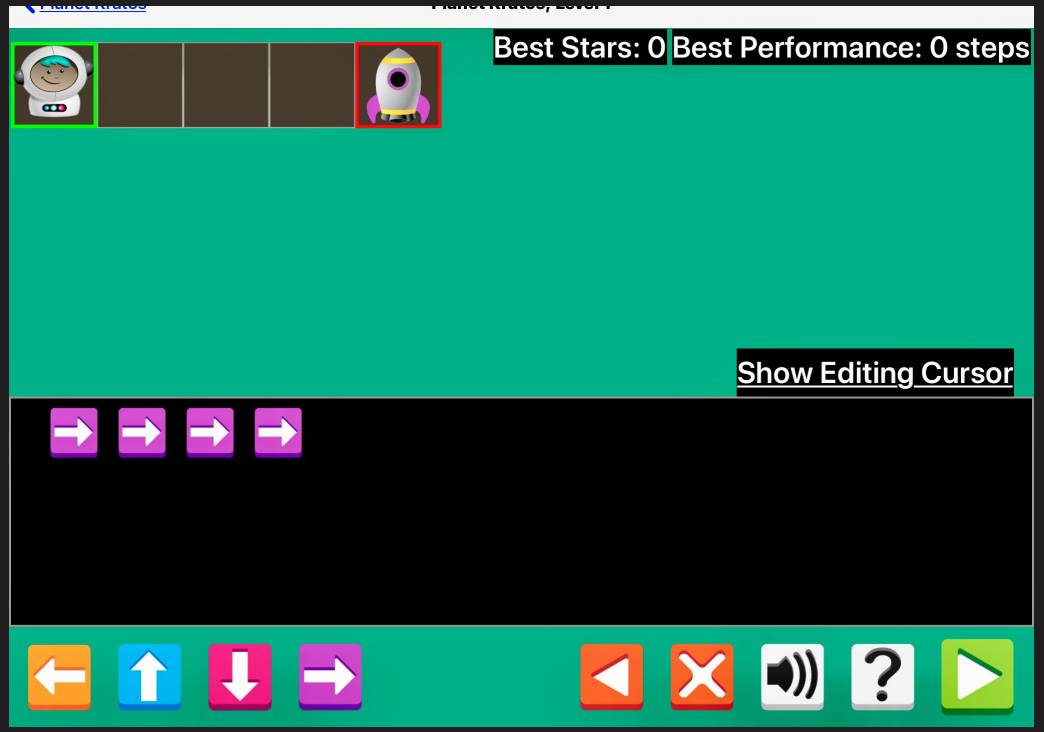
The Mission

- We are the programmers of the spaceship’s computer ZX-5
- We program the directions the astronaut needs to get back to the ship
- There are 5 planets to explore and 6 levels per planet

Vocabulary

- Sequence: putting steps in an order
  First, Second, Third, Last
- Debug: finding an error and fixing it
  It did not work. Why? How do we fix it?
- Loop: an action that is repeated
  Walking you repeat the same action of moving your feet until you reach your destination.

Example Planet



- Drag your finger around to explore
- The square the Astronaut is on is 0.
- Count the squares to and including the one the ship is on.
- Press the arrow 4 times
- You just wrote the code!

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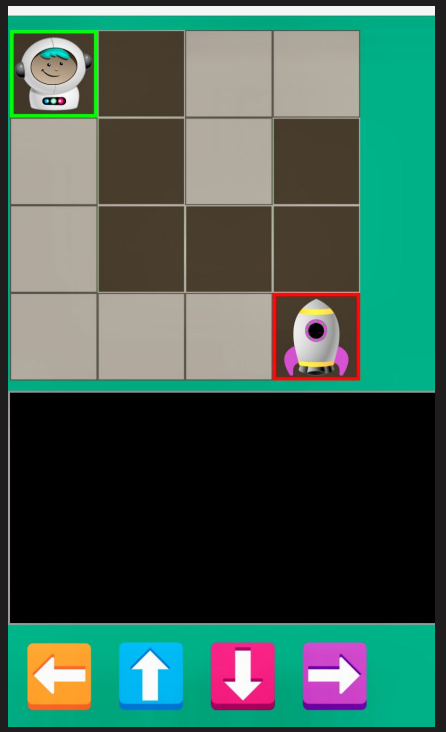
Moving – Sequence – Kratos Level 4

- Planets are mapped out in a grid
- You move the Astronaut one square to the next in a sequence
- Each press of the directional arrows tells the Astronaut to hop one square.



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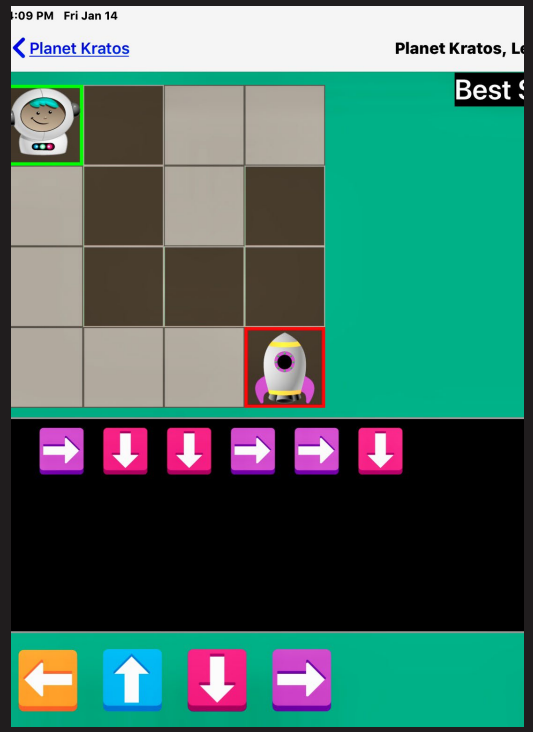
Writing the Code

- Right 1
- Down 1
- Down 1
- Right 1
- Right 1
- Down 1



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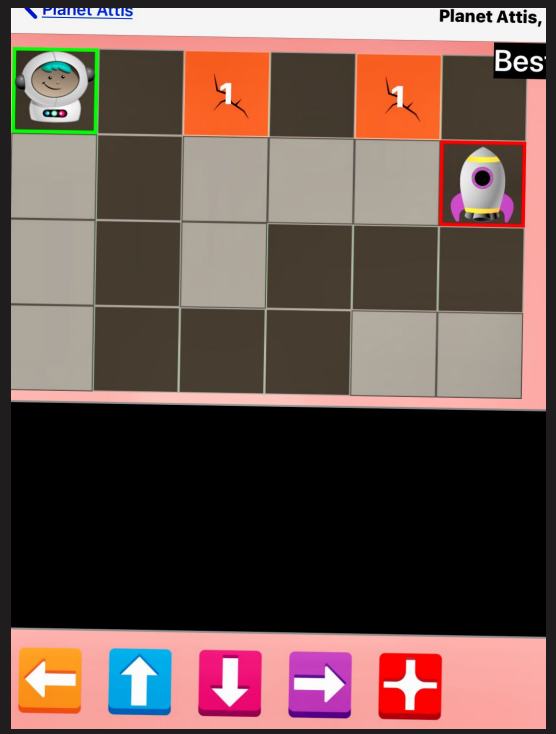
Problem-Solving-Debugging-Attis Level 2



- What is the shortest route?
- If it does not work, that is a bug
- Find the bug and fix it
- Mistakes are part of the learning process

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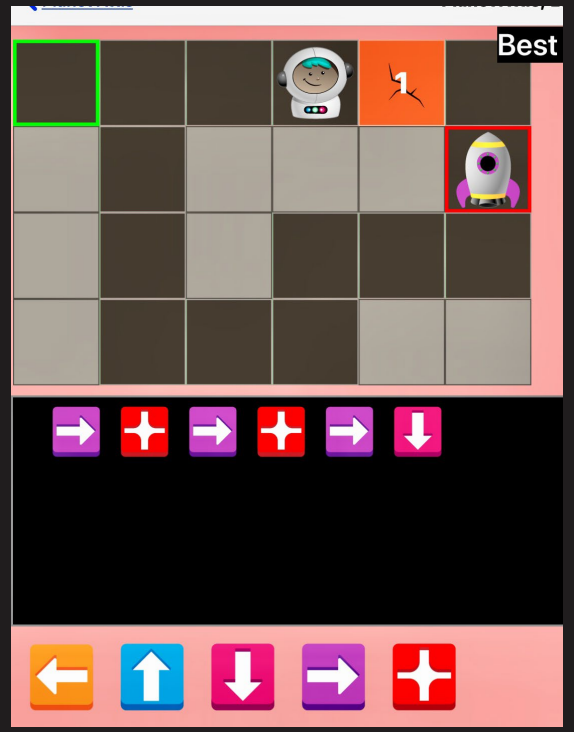
Oooops



- Right 1
- Blast 1
- Right 1
- Blast 1
- Right 1
- Down 1

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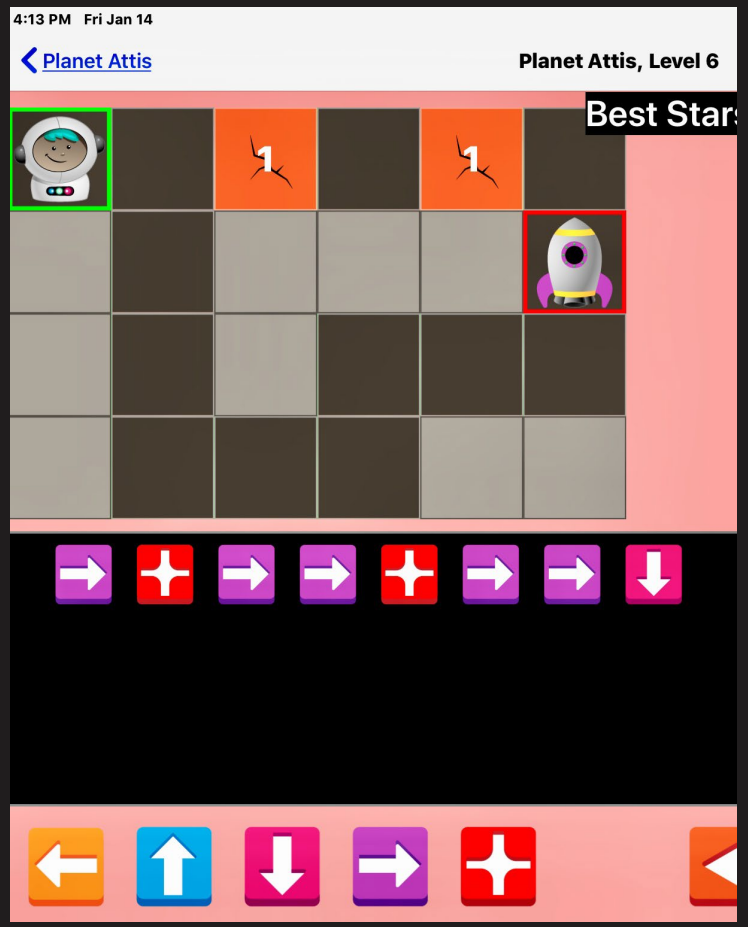
Got It!



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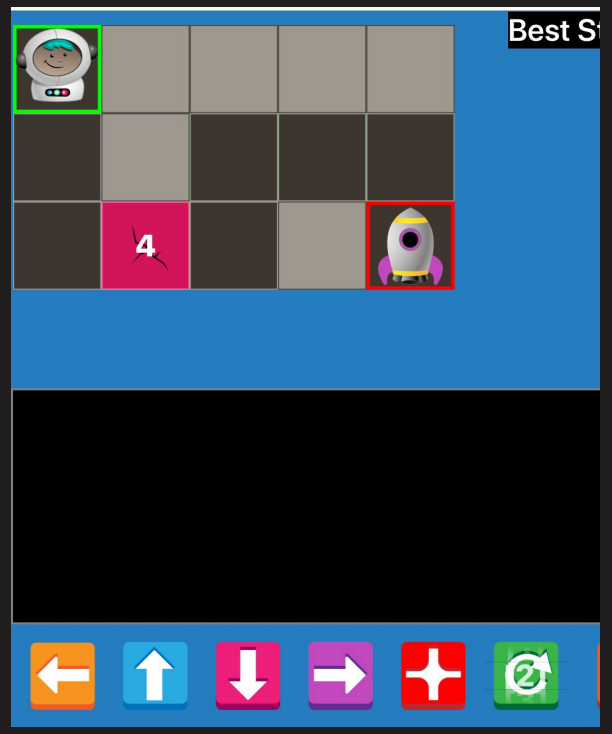
Repeat Movements-Loops-Pollux Level 3

- You can shorten the code by using loops
- What are some loops in real life?



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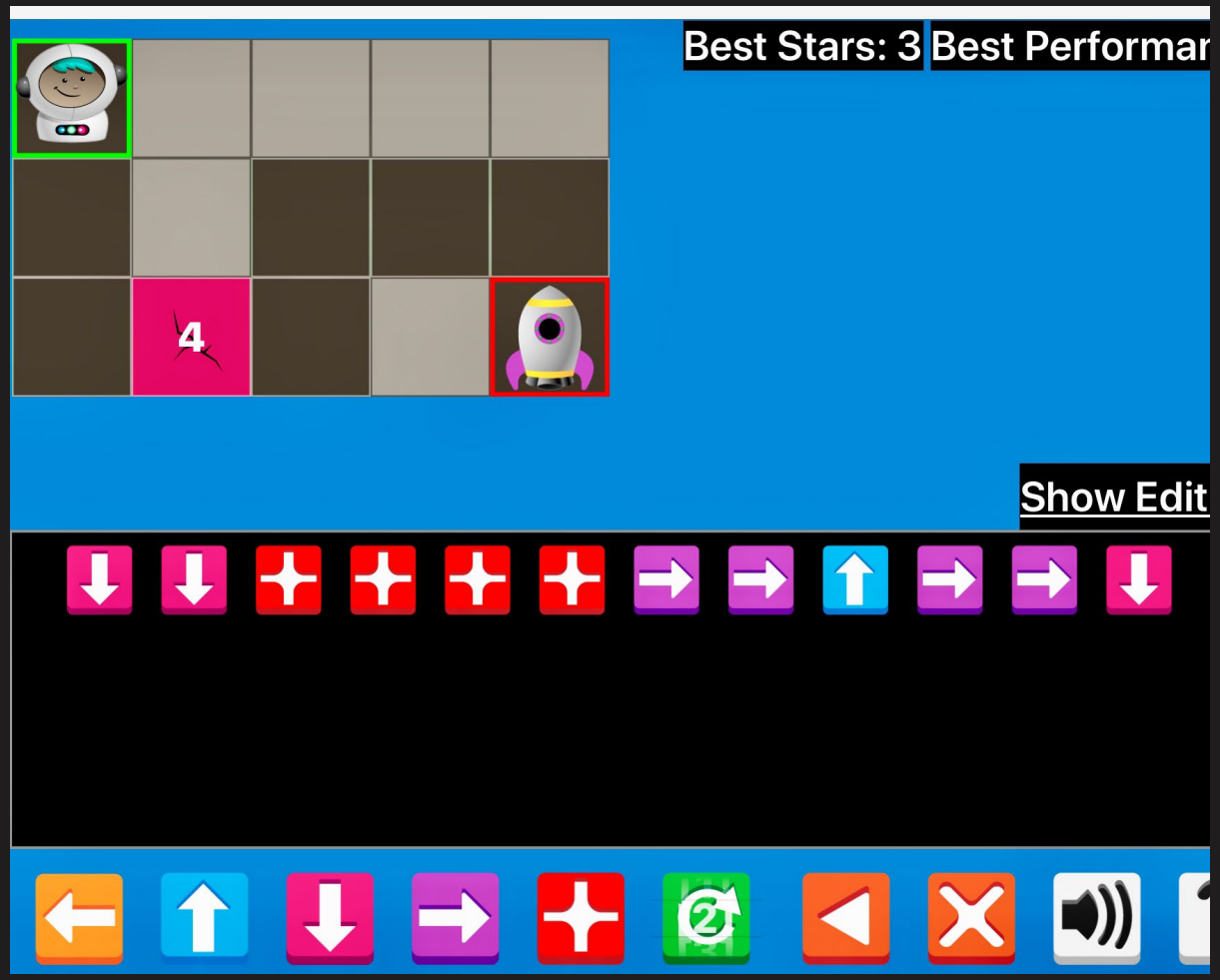
12 Steps

- Down 1
- Down 1
- Blast 1
- Blast 1
- Blast 1
- Blast 1
- Right 1
- Right 1
- Up 1
- Right 1
- Right 1
- Down 1



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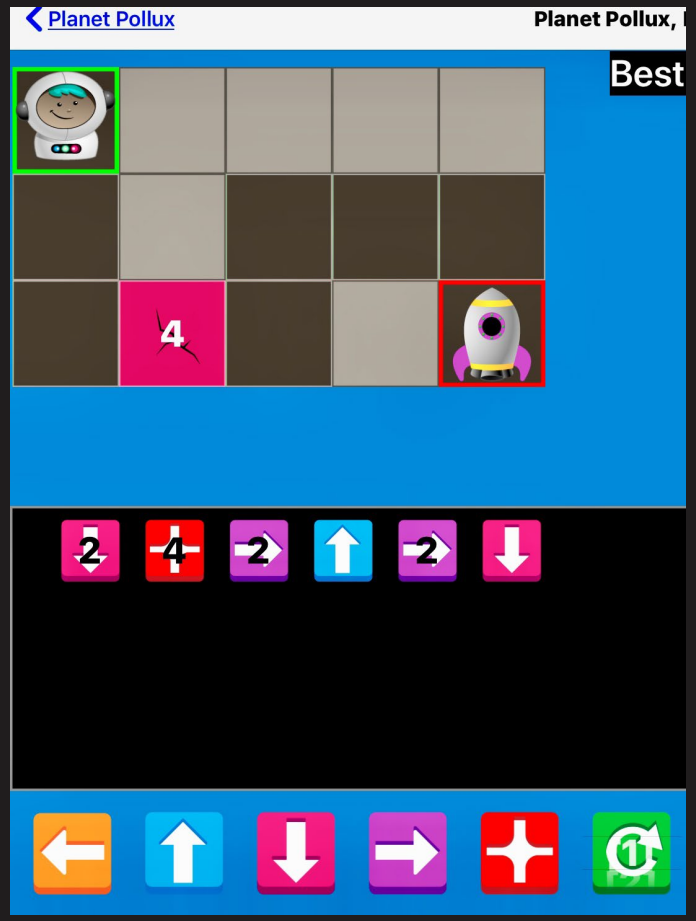
6 Steps with Loops

- Down 2 Loop
- Blast 4 Loop
- Right 2 Loop
- Up 1
- Right 2 Loop
- Down 1



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Poll Question 2

How are you doing?

1. I feel a little better about pursuing this with my students.
2. Great, I want to learn more!
3. I am still confused.

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Review from a High School Student

- “I know this is for younger kids, but my friend and I had a lot of fun with it!”

Pro Tips

- Computer Science Journal, to keep track of the process
- Write it down, practice your braille or touch-typing
- Use the 3D printed materials
- Emboss the grids to have a tactile connection to the concepts
- Make cards for the directions, blasts, and loops to keep track of the code
- Use other tactile elements to work out the path

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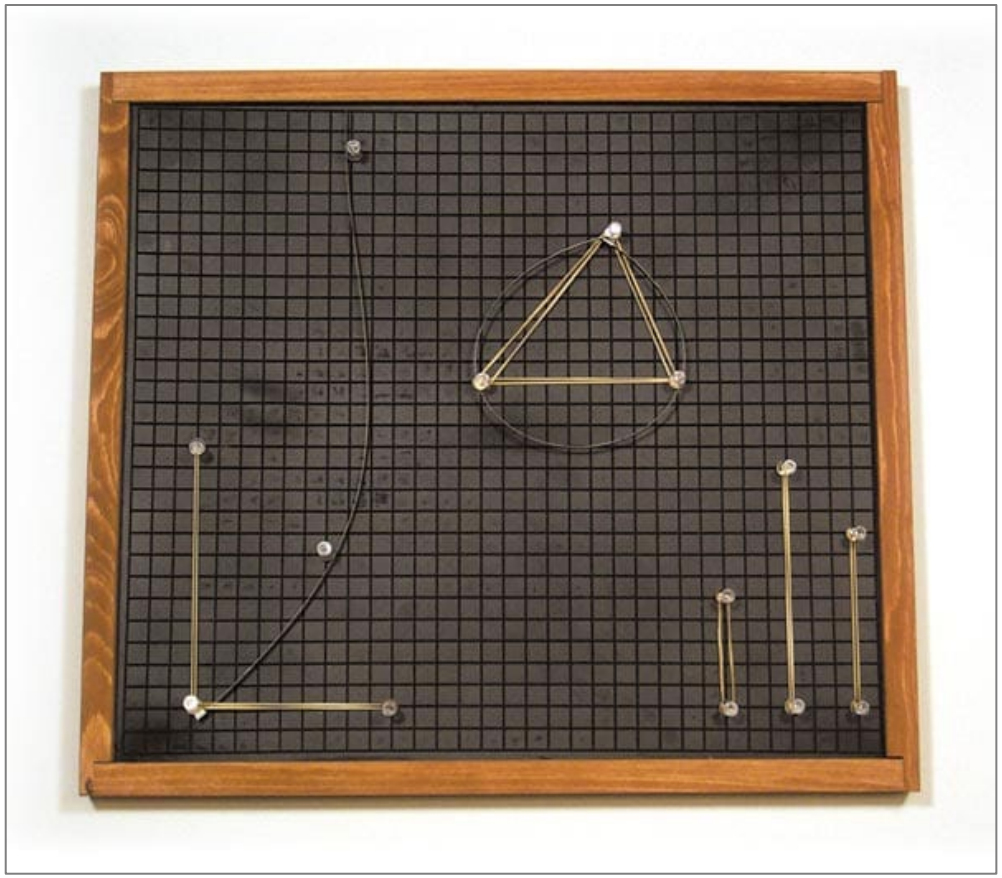
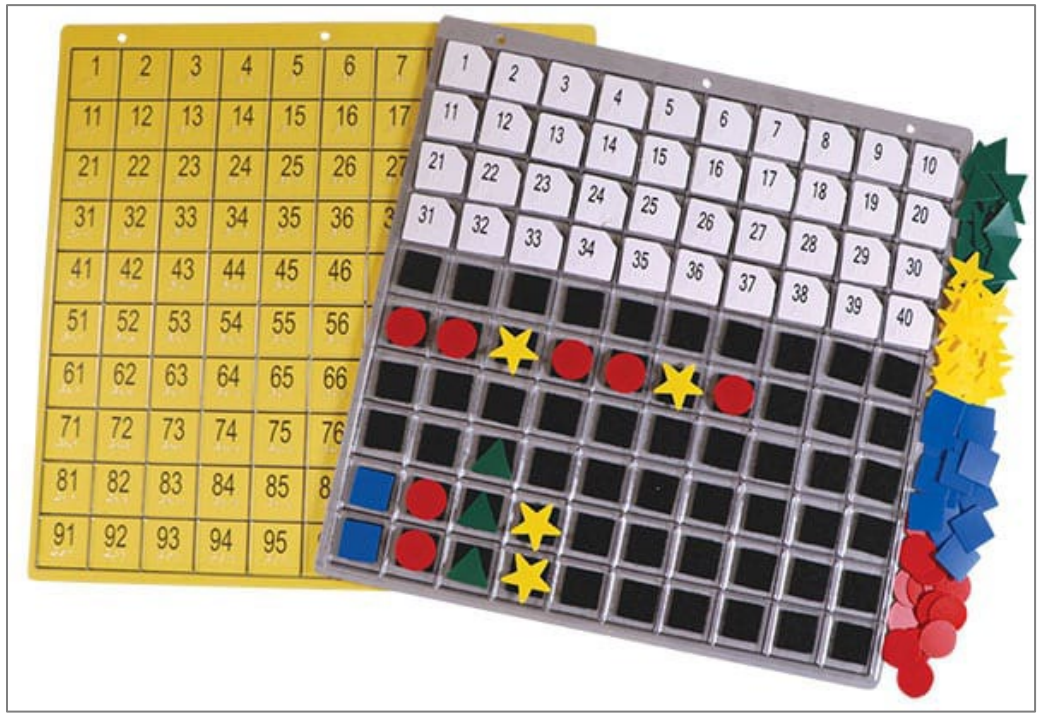
Picture Maker: Wheatley Tactile Diagramming Kit

Graphic Aid for Mathematics



- To understand a grid
- Practice finding different coordinates
- Use pushpins to mark your place

Hundreds Board and Manipulatives



- Make a tactile version of a level
- Use the different shapes for the Astronaut, ship, alien, and walls
- Physically count the spaces

Blast Off!!!

Now that you can sequence, debug, and use loops how do you learn more?

- Continue with “On the Road to Code”
- Code and Go Mouse - March 10th
- Code Jumper – April (TBA)
- Coding Symposium the Week of May 9th

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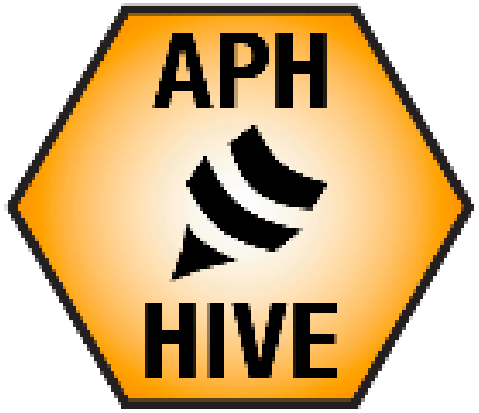
Code and Go Mouse

Continue down the road…

- Next month join us
- Meet Colby and continue to add to your coding toolbox
- Bridge from CodeQuest

The Hive

- One-stop shop for professional development
- FREE
- ACVREP credit
- Resources
- Self-paced learning
- Peer Reviewed



Learning Management System

New! To retrieve your ACVREP Cert

1. Visit aphhive.org
2. Register or sign in to APH Hive
3. Add opening/closing codes on “Access Webinar Certificate” page
4. View certificate (or revalidate codes if error occurs)
5. Return to APH Hive dashboard to access stored certificates, by scrolling down to “My Webinar Certificates."

ExCEL: Live and Recorded

- After school and Weekends
- Attend live lesson together for supplemental instruction
- Assign video for independent homework
- Provide to parent/caregiver for activities at home

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Virtual ExCEL Academy 2022

- Singing 101 1/19
- Deductive Detectives Skills 1/29
- En español: Ir de compras al Supermercado 2/26
- And More to come!

APH Resources

- National Prison Braille Network
- Museum
  - Migel Library
  - Hall of Fame
- InSights Art Contest
- Typhlo & Tactus Competition
- Accessibility Hub
- NIMAC
- Louis Database
- Tactile Graphics Image Library

References

- What Do We Know About the Expansion of K-12 Computer Science Education? Vegas and Fowler 2020 https://www.brookings.edu/research/what-do-we-know-about-the-expansion-of-k-12-computer-science-education/
- Code.org Six Studies on benefits of CS: https://codeorg.medium.com/cs-helps-students-outperform-in-school-college-and-workplace-66dd64a69536
- CodeQuest a free accessible app: https://www.perkinselearning.org/technology/blog/codequest-free-aph-app
- What is Coding: https://www.codeconquest.com/what-is-coding/how-does-coding-work/

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Resources

- Coding for VI https://ijcses.org/index.php/ijcses/article/view/25
- CodeQuest a free accessible app: https://www.perkinselearning.org/technology/blog/codequest-free-aph-app
- Teaching CodeQuest https://www.perkinselearning.org/technology/blog/teaching-codequest-app-students-who-are-visually-impaired
- Other Tech Skills https://www.perkinselearning.org/technology/blog/moving-forward-accessible-digital-math-part-1
- Paths to Tech K12 https://www.perkinselearning.org/technology/blog/accessible-k-12-computer-science-resources
- Paths to Tech Accessible Coding post: https://www.perkinselearning.org/technology/blog/coding-posts-summary
- Paths to tech digital math skills: https://www.perkinselearning.org/technology/blog/math-apps-and-activities-summary-post-students-k-3rd-grade
- What is Coding: https://www.codeconquest.com/what-is-coding/how-does-coding-work/

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