Access Academy

AMERICAN PRINTING HOUSE

On the Road to Code 2:

Code and Go Mouse

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Paths to Technology

Objectives

1. Reinforce orientation concepts of directions, obstacle avoidance, and route planning with tactile graphics

2. Build vocabulary for coding concepts such as, Algorithm: commands in a sequence, input: giving the computer the commands, store: holding on to information, and output: taking the stored information producing an action.

3. Practice math skills of building the mazes from the tactile graphics, finding coordinates, and creative problem-solving other routes.

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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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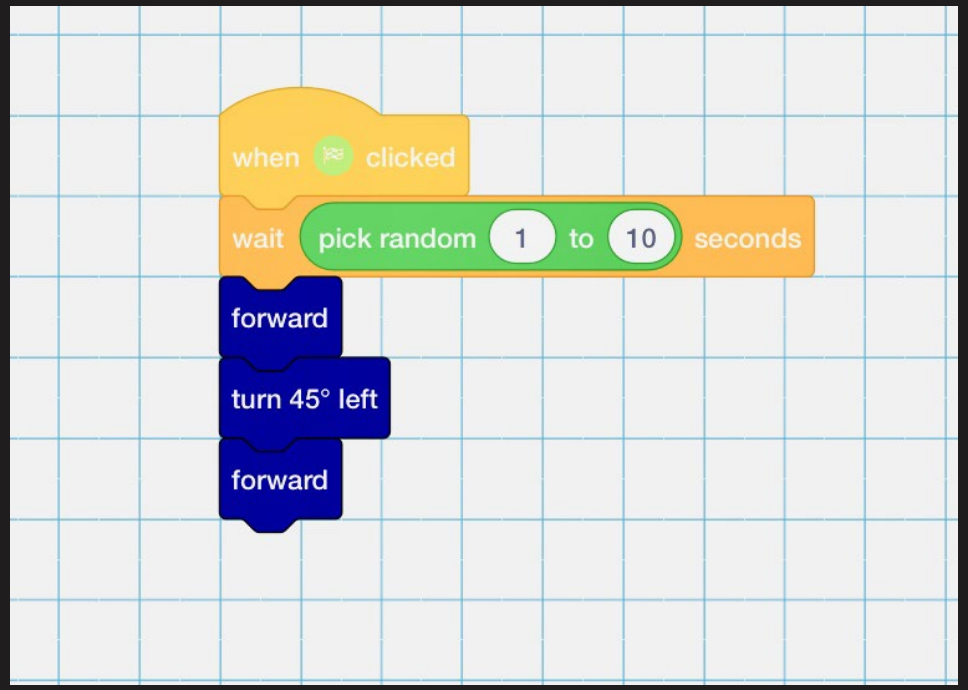
What is Coding?

- 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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What can using a programmable robot teach?

- Problem solving
- Self-correcting errors
- Critical thinking
- Analytical thinking
- If-then logic
- Working collaboratively with others
- Discussion and communication skills
- Calculating distance
- Spatial concepts

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How is This Coding?

- The process
- Like block coding
  - A press of the buttons ”writes” a piece of code

Blasting off from CodeQuest

Connecting and building

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Colby VS CodeQuest

- CodeQuest is an app, requiring some pre-requisite tech skills and some basic mental mapping skills.
- the game play is intended to be 2D with your finger on the screen.
- Code and Go Mouse is intended to be hands-on with a robot, tactile manipulatives and tactile game board.
- 3D and is geared for preschoolers and higher.

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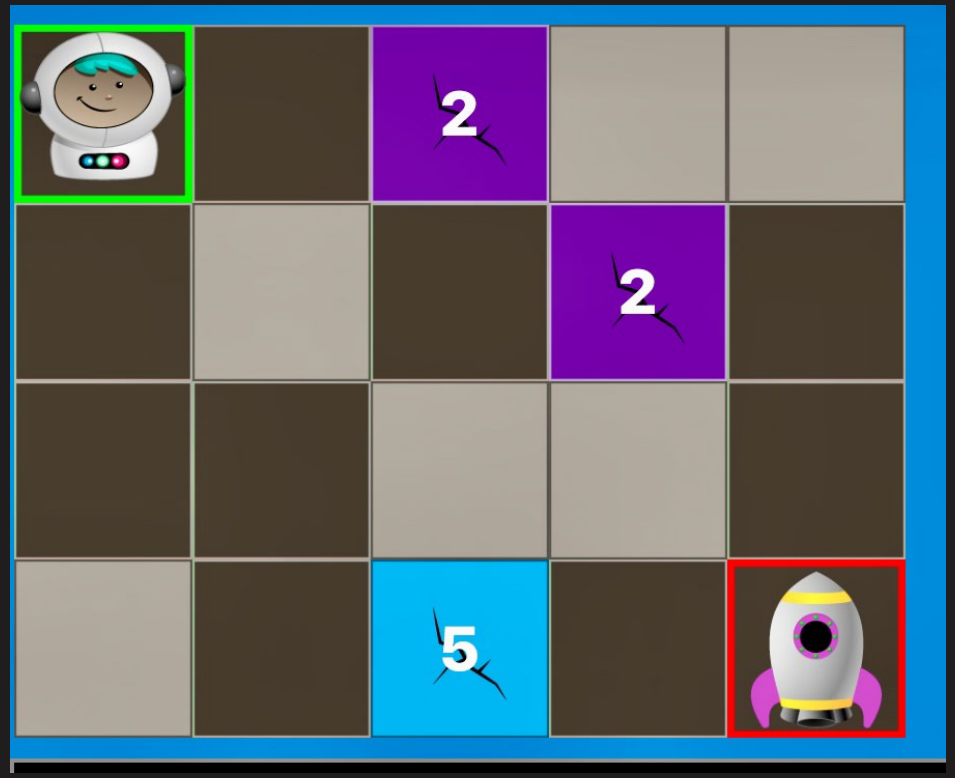
Building Off of CodeQuest

- Directions
- Grid Layout
- Commands in the right order
- Press the directional arrow buttons
- Create your own mazes
- Going from 2D to 3D



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Vocabulary from CodeQuest

- 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.

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Meet Colby

The Code and Go Mouse

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What’s in the Box?

- Colby the Mouse
- A wedge of Cheese
- Green tiles to build a mat
- Purple walls to build the mazes
- Orange tunnels to add to the mazes
- Small command cards to write the code
- Maze layout cards and
- Tactile graphics of the maze layout cards

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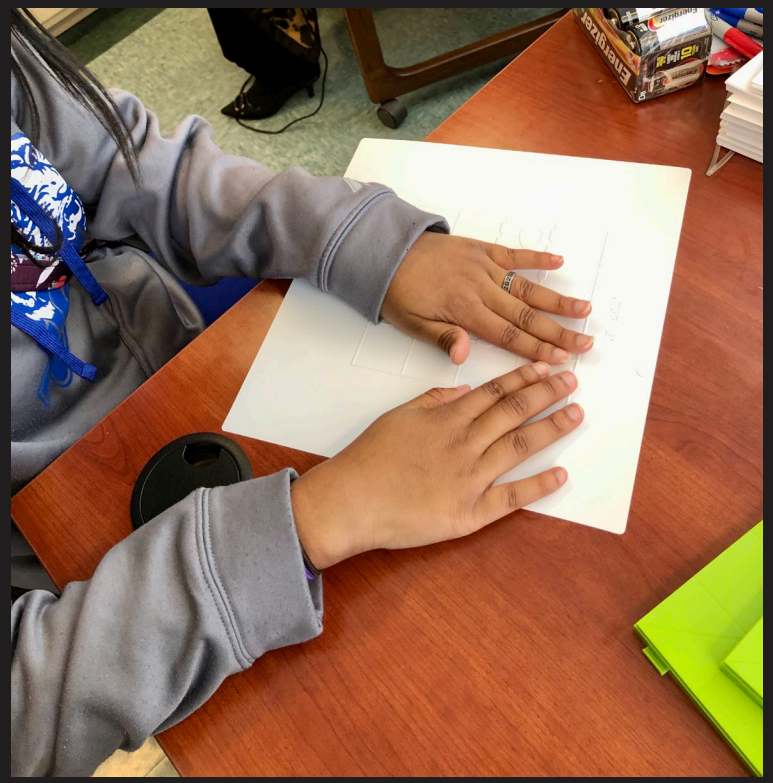
Transferable Skills



- Reinforce O&M skills with route planning
- Build confidence with math concepts of grids, rows, and columns
- Reading Tactile graphics
- Reading a map key

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O&M Skills

- **We want the shortest path.**
- **Reading a map**
- **Giving directions**
- **IRL**

Math Concepts-What is a Grid

- Rows from left to right
- Columns from top to bottom
- Find the coordinates
- Start at 0
- Count the spaces up to and Including the cheese

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New Vocabulary

- **Algorithm: a sequence of commands**
- **Input:** The Signals or instructions sent to a computer.
  - Pressing the buttons/adding a pod
- **Store:** Saving information in order to be used at a later time.
  - The mouse holds on to the order of the button presses/writing things down in your CS journal/ the app
- **Output:** Data or information that is created by a computer.
  - The mouse running the maze/the song or other sounds playing

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Set Up

1. Orient all tiles with the two smooth sides facing to the left
2. Read one row at a time on the tactile graphics.
3. Practice locating different coordinates
4. Center Colby and the cheese on their tiles
5. Use a tray or boxes to keep the pieces organized.

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Directional Concepts

1. Identify: forward, back, left, and right
2. Reposition the mat so that the mouse and the student face the same direction.
3. Talk about perspective with your student.

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Get Coding

1. We are writing the directions for the mouse to get through the maze and find the cheese.
2. The mouse moves the length of one tile with every press of the forward button.
3. Pressing the left or right buttons turns the mouse to face that direction
4. Lightly touch the top of his back as he goes.

Algorithm, Input, Store, Output

- Laying out the commands in the right order to build an **Algorithm**
- Pressing the buttons to **input** the commands
- Colby **stores** the commands until…
- Press go and Colby will **output** the commands to run the maze

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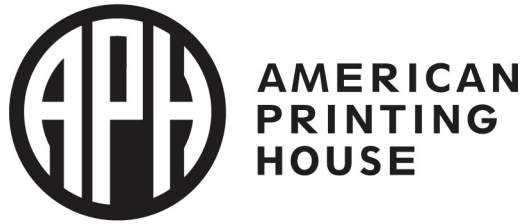
How is this Coding?



Expanding

- Make a maze/map of your house
- Write code cards to go with the tactile graphics
- Find the:
  - fastest route,
  - find the slowest route,
  - avoid the “actions”…

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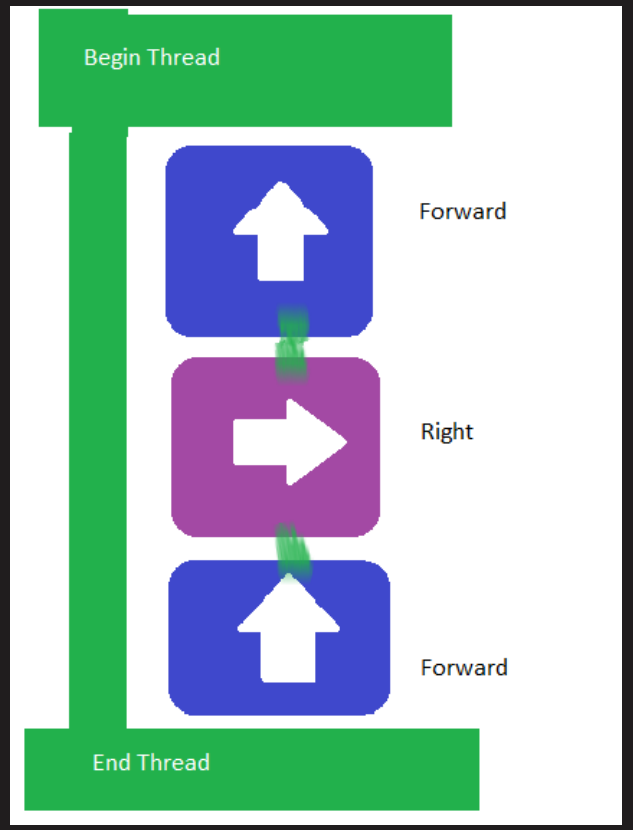
Sample Writing Code



CARD 2

BEGIN THREAD

FORWARD 1

RIGHT

FORWARD 1

END THREAD

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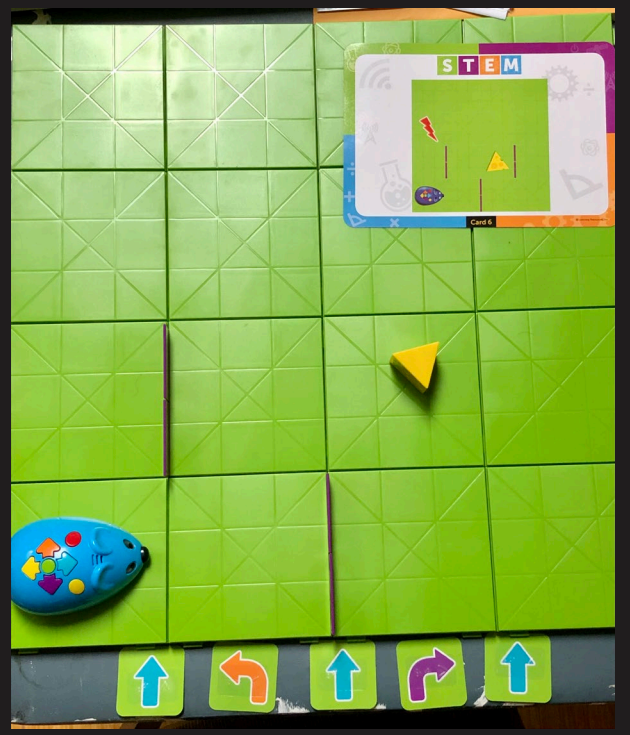
Card 6

BEGIN THREAD
- FORWARD 1
- LEFT
- FORWARD 1
- RIGHT
- FORWARD 1

END THREAD



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Alternate Path

CARD 11

BEGIN THREAD

FORWARD 2

LEFT

FORWARD 3

END THREAD

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Add an Action

```
BEGIN THREAD A
  FORWARD 1
  LEFT
  FORWARD 1
  FORWARD 1
  ACTION
  LEFT
  FORWARD 1
END THREAD
```

```
BEGIN THREAD B
  FORWARD 1
  LEFT
  FORWARD 1
  ACTION
  FORWARD 2
  LEFT
  FORWARD 1
END THREAD
```

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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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What's Next?

- Now that you are exploring the world of coding with Colby and can read tactile graphics, input commands, and problem solve through a maze…
- Code Jumper April 14th
- Coding Symposium May 9-13

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Code Jumper

Continue down the road…

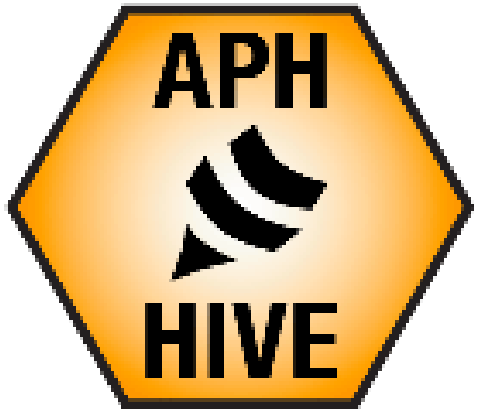
- Next month join us
- Continue to add to your coding toolbox with Code Jumper
- Bridge from CodeQuest and Colby

Thanks To TaMyah

- Intern with Outreach at APH
- High School Student
- Star of the videos

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."

APH Resources

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

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!

Resources

- Road to Code Blog post https://www.aph.org/aphs-road-to-code/
- Coding for VI
https://ijcses.org/index.php/ijcses/article/view/25
- Coding Concepts https://www.perkinselearning.org/technology/blog/coding-concepts-code-and-go-robot
- Code and Go robot Mouse post on Paths to Technology
- 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
- 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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