green mouse
ACADEMY

Dear Parents,

Has your child ever talked to you about coding, web design or being able to create their own real-world app? As soon as a child discovers the internet, they are usually eager to create apps or websites that can revolutionize the world or find a solution to fix problems. There is no time better than now to encourage this. There are plenty of options for careers when it comes to web development. Although, before your child can choose a career on this path, or start applying for jobs, they will need to master skills such as coding languages, photoshop, web design and more. This is where we'd like to offer a head start in a fun and easy way!

Your child will be able to build real world working apps, games and websites using blocks, JavaScript, CSS, HTML, and more. You do not have to be an expert in any of these areas to complete the lessons we have provided. These lessons should be fun, engaging and a learning experience for both you and your child!

What you'll need to get started:
- A tablet, computer, or smartphone
- The internet, to be able to access code.org

Join us for these fun lessons at https://studio.code.org/s/express-2019.

To learn more about our Technology Arts programs or if you have any questions, please visit us at www.greenmouseacademy.com.

3, 2, 1, CODE!

6th- 8th Code.org Activities

Week 1: Sequencing   Activity Card 1
- Dance Party Lesson 1
- Sequencing Lesson 2 – 5
- Aluminum Boats - Unplugged Activity

Week 2: Loops   Activity Card 2
- Loops – Lessons 6-7
- Video Series – "How do computers work?" Series 1-3
  Complete Lesson 8
- Loops – Lessons 9-10

Week 3: Conditionals   Activity Card 3
- Conditionals – Lessons 11-12
- Video Series– "How do computers work?" Series 4-6
  Complete Lesson 13
- Conditionals – Lessons 14-15

Week 4: Functions   Activity Card 4
- Functions – Lesson 16
- Video Series– "Coding is Not Difficult" with Bill Gates
  Complete Lesson 17
- Functions – Lesson 18

Activity Card 1: Sequencing (Week 1)

Explore

Welcome to Sequencing! During this week of activities, you will learn how to translate an algorithm into a program, decode and run a program created by someone else, and identify and address bugs or errors in sequenced instructions.

Create

Activity 1: Dance Party (Lesson 1)

In this activity, students will use blocks of code to choose different dancers, change the dance moves, make the dancers respond to the music, and make them interactive. To begin this activity, click here: https://studio.code.org/s/express-2019/stage/1/puzzle/1

Activity 2: Sequencing (Lesson 2 - 5)

For Activity 2, you will complete 4 lessons about sequencing. These four lessons may seem basic, but it's practice and it will help you have a better understanding of sequencing. You will also learn about debugging, with Scrat, in Lesson 3. To complete this activity, start here and complete all 4 lessons in Sequencing:
https://studio.code.org/s/express-2019/stage/2/puzzle/1

Activity 3: Aluminum Boats – Unplugged Activity

To begin, first refer to the pdf handout titled: Activity Guide – Aluminum Boats. In this unplugged activity, you will build a boat that holds the most possible pennies, using a piece of aluminum foil. Build two boats and try to improve the design between the first and the second boat. There are 3 rules:
1. You may only use a single piece of foil to build your boat
2. You may not touch or adjust your boat once it is in the water
3. You must add pennies one at a time

The objective of this activity is all about learning how to problem solve, how to identify different strategies used to problem solve, and to iteratively improve a solution to solve a problem.

Share

Parents take pictures and post to social media and tag us at #greenmousecafe on Twitter and #greenmouseacademy on Facebook! Below are a few guiding questions you can ask your middle schooler.

1. What was your favorite part of this activity?
2. What was most challenging?
3. What aspect of your boat needed the most improvement?

Name(s)_____ Period _____ Date _____

Activity Guide - Aluminum Boats

Goal
Build a boat that holds the most possible pennies, using a piece of aluminum foil. You will build two boats and will try to improve your design between the first and the second.

Rules
- You may only use a single piece of foil to build your boat
- You may not touch or adjust your boat once it is in the water
- You must add pennies one at a time

Develop a Plan
- What kind of boat does your group plan to make? Write a description or draw a picture below.

- What are the strengths of this design? What possible weaknesses might this design have?

Test Your Boat
- How many pennies did your boat hold?

- Why did your boat eventually sink? What needs to be improved?

Evaluate and Improve
- What are the most common kinds of problems you see among the boats tested?

- What ideas seem to be working well?

Develop a Plan

- What kind of boat does your group plan on making? Write a description or draw a picture below.

- What are the strengths of this design? What possible weaknesses might this design have?

Test Your Boat

- How many pennies did your group's new design hold?

- Why did your boat eventually sink? What needs to be improved?

Reflect

- What was your favorite part of this activity? What was the most challenging for you? Were they the same?

- Why do you think we're doing this activity in a computer science class?

Activity Card 2: Loops (Week 2)

Explore
Welcome to Loops! Almost all programming languages provide a concept called loop, in which the purpose is to repeat the same, or similar code a number of times.

Create
Activity 1: Loops – Lesson 6 & 7
In Lesson 6, program BB-8 to collect all the scrap metal. You will learn that instead of writing the same code over and over, you can use one loop to complete the same number of steps. https://studio.code.org/s/express-2019/stage/6/puzzle/1. In Lesson 7, program the artist to create sticker art. You can practice and make your own sticker art, once you learn how to code using loops. Find the lesson here:
https://studio.code.org/s/express-2019/stage/7/puzzle/1

Activity 2: Video Series – "How do computers work?" Series 1-3
For Activity 2, watch half of the Video Series – "How do computers work?" Watch the first 3 videos for this activity. In the next activity card, you will finish watching the last 3 videos. Bill Gates kicks off the introduction to this series. It is especially important to learn how computers actually work, starting with what makes a computer, a computer.

Video #1: https://www.youtube.com/watch?v=OAx_6-wdslM&list=PLzdnOPI1iJNcsRwJhvksEo1tJqjIqWbN-&index=1

Video #2: https://www.youtube.com/watch?v=mCq8-xTH7jA&list=PLzdnOPI1iJNcsRwJhvksEo1tJqjIqWbN-&index=2

Video #3: https://www.youtube.com/watch?v=USCBCmwMCDA&list=PLzdnOPI1iJNcsRwJhvksEo1tJqjIqWbN-&index=3

Once you are finished watching these videos, click on this link to complete Lesson 8 in Loops, called **Nested Loops in Maze:** https://studio.code.org/s/express-2019/stage/8/puzzle/1

Activity 3: Loops – Lessons 9-10
In Lessons 9 & 10, you will be working with two completely different characters, characters from Frozen and Minecraft. In Lesson 9, you will help Anna and Elsa draw snowflakes. It looks easy at the beginning, but trust me, it gets tough. Click here for Lesson 9: https://studio.code.org/s/express-2019/stage/9/puzzle/1. In Lesson 10, you will learn how to use many repeat blocks to help create your world in Minecraft. Click here for Lesson 10: https://studio.code.org/s/express-2019/stage/10/puzzle/1

Share
Below are a few guiding questions you can ask your middle schooler:
1. Can you tell me the 4 common things that make a computer work? (I'll give you the first letter of each answer) I_____, S_____, P_____, & O_____.
2. How do 1's and 0's work in a computer?

Activity Card 3: Conditionals (Week 3)

Explore
Welcome to Conditionals! A conditional statement tells a program to execute different actions depending on whether a condition is true or false.

Create
Activity 1: Conditionals – Lesson 11 & 12
In this activity, you will learn how to use if/else statements with Bee. For example, if there is a flower under a cloud, you will have to "get the nectar."
https://studio.code.org/s/express-2019/stage/11/puzzle/1 Once you complete Lesson 11, go ahead and finish Lesson 12, While Loops with Farmer: https://studio.code.org/s/express-2019/stage/12/puzzle/1

Activity 2: Video Series – "How do computers work?" Series 4-6
For Activity 2, you will finish the last 3 videos in the series – "How do computers work?" Listen and take notes (hint hint), in case your parents ask you a few of the guiding questions below. You can find the video here:
https://www.youtube.com/watch?v=ZoqMiFKspAA&list=PLzdnOPI1iJNcsRwJhvksEo1tJqjIqWbN-&index=4 Once you finish the videos, complete Lesson 13, Conditionals in Minecraft found here: https://studio.code.org/s/express-2019/stage/13/puzzle/1

Activity 3: Conditionals – Lessons 14-15
In Activity 3, you will finish the last 2 lessons in Conditionals. You can find Lesson 14, Using Until Loops with Angry Birds, here: https://studio.code.org/s/express-2019/stage/14/puzzle/1. In Lesson 15, you will Harvest with Conditionals. The Harvester needs your help to pick the crops that are ready to harvest. Keep an eye out for sprouts! https://studio.code.org/s/express-2019/stage/15/puzzle/1

Share
Below are a few guiding questions you can ask your middle schooler:
1. Can you tell me the definition of a conditional statement?
2. Tell me one thing that stood out to you in series 5.
3. What is an adder, in regards to binary digits?

Activity Card 4: Functions (Week 4)

Explore
Welcome to Functions! A function is a sequence of commands that can be reused together later in a program. Functions help programmers avoid repeating the same commands again and again

Create
Activity 1: Functions – Lesson 16
In this activity, Functions in Minecraft, you will complete an Hour of Code. To complete the Hour of Code challenge, you will need to write code to program the agent. You will work together with the Agent to clear any obstacles in your path so you can pick up the items you need for your journey. Only the Agent can place and break blocks and only you can collect items. https://studio.code.org/s/express-2019/stage/16/puzzle/1

Activity 2: Video – Coding is Not Difficult
Watch the video, Coding is Not Difficult with Bill Gates and Mark Zuckerberg. https://www.youtube.com/watch?v=hb7Q33ysCwI. Big Techies explain the importance of learning to code. Once you are finished with watching the video, complete **Lesson 17**, Functions with Harvester https://studio.code.org/s/express-2019/stage/17/puzzle/1.

Activity 3: Functions – Lesson 18
Complete the last Functions course, Lesson 18. In this lesson, you will learn how to draw a square by moving and turning 4 times. You will take that function and give it a name, "Draw a Square." Now when you want it to invoke that function, you just use the block "Draw a Square" and you won't have to write any other codes. You can find the lesson here: https://studio.code.org/s/express-2019/stage/18/puzzle/1

Share
Below are a few guiding questions you can ask your middle schooler:

1. What is a function?
2. How was a "function" used in Lessons 16-18?
3. If you want to continue and finish all of the lessons in this express course, complete Lessons 19- 28 here: https://studio.code.org/s/express-2019/stage/19/puzzle/1