Hour of Code™ at Box Island!
Lesson Plan

Recommended Age Range: 6+
Technical Requirements: Phones or tablets, Android & iOS.
Supported Languages: English, Spanish, German, Italian, French, Portuguese, Brazilian, Chinese, Japanese, Korean, Vietnamese, Indonesian, Turkish, Romanian, Russian, Swedish, Norwegian, Danish, Finnish, Icelandic.

LESSON OVERVIEW

Coding is becoming a key part in the 21st century literacy. There is no question about it. The world is transitioning to a point where coding will be a necessary skill in most modern jobs. Therefore, sparking children's interest and enabling them to take easy and frictionless first steps into the field is vital.

In this fun mobile tutorial, students take part in a journey on Box Island that has been specifically designed for the Hour of Code campaign. Students are introduced to many of the basic fundamentals of coding through engaging puzzles in the tropical wilderness of Box Island. That includes fundamentals such as algorithmic thinking, sequencing and loops.

The lesson is intended for beginners of all ages and has the goal of being gender neutral and cultural friendly. The tutorial contains sets of puzzles that have been tailored for three different age groups, i.e. 6-8 year olds, 9-11 year olds and 12+ year olds. The lesson can also be adapted for young or old students using the differentiation suggestions provided in the "Activity" section below. Students are not required to have any previous experience with coding.

Get the lesson at http://boxisland.io/hourofcode

LESSON OBJECTIVES

By participating in this lesson, participants will
- Gain basic skills in the fundamentals of coding in an engaging way
- Put those skills into perspective with real-world applications and problems
- Identify key computer science vocabulary
- Gain valuable skills in analyzing mistakes and coming up with suggested solutions (i.e. debugging)
- Be positively influenced to learn more about computer science and coding

Teaching Summary
45-60 MINUTES

MATERIALS AND PREPARATION

VOCABULARY

GETTING STARTED (5 MINUTES)

ACTIVITY (30-45 MINUTES)

WRAP UP (5 MINUTES)

ASSESSMENT (2 MINUTES)

BEYOND AN HOUR OF CODE

TEACHING GUIDE

MATERIALS AND PREPARATION

- Review the Hour of Code Educator Guide and Best Practices from Successful Educators to plan your Hour of Code event.
- Register your Hour of Code event to receive a thank you gift and fun posters.
- Make sure to download the Box Island app in advance to the mobile devices that will be used (available for both Android or iOS phones and tablets). Also make sure those devices are fully charged before the activity.
- Review and complete the lesson yourself. Be sure to test it first before asking your students to complete it. You do not need to have any prior coding experience to facilitate this lesson.
- We recommend that you print out the certificates of completion before the activity, for each student, to hand out at the end.
- In some settings it is relevant and motivating for students to share their experience online. If so, you may want to seek permission from parents.
- This lesson is designed as a part of Computer Science Education Week. However, your Hour of Code activities can happen at any time of the year. The resources for this lesson will continue to be available after the CSED week.

VOCABULARY

- **Code** – To write code, or to write instructions for a computer
- **Algorithm** – An algorithm is a procedure or formula for solving a problem.
- **Program** – An algorithm that has been coded into something that can be run by a machine.
- **Debugging** – Finding and fixing problems in your algorithm or program.
- **Simulate** – The process when a program is being run (on a machine).

GETTING STARTED (5 MINUTES)

Kick off your Hour of Code by inspiring students and discussing how computer science impacts every part of our lives.

Start by asking your students whether they know what coding or programming is. Give them a chance to express their interpretation of the terms. Explain to the class that in computer science, coding means a set of instructions that a machine or a computer understands. Just like we use languages to talk to each other or

instruments to play music, we can code a set of instructions (i.e. programs) to make the computer do what we want!

Explain to the class that by learning how to code, they not only learn how to use computers but also how they work. And by understanding how computers work, you can create fun games, apps, websites and a lot more!

Explain ways technology impacts our lives, with examples both boys and girls will care about. Talk about saving lives, helping people, connecting people, etc.
- 3D printing is being used to create limbs for amputees; microchips to find lost pets; skyping relatives who are far away to keep in touch.

Let students know that it's important to learn more about how technology works regardless of what career they want to go into.
- Farming (using data for watering and fertilizing), fashion (programmable LED dresses at NYFW 2015), medicine (using robots for surgery)

If you have additional time, show one of Code.org's [inspirational videos](#) to frame the discussion:
- For K-8 students, we recommend [The Hour of Code is Here](#)
- For older students, we recommend [Anybody Can Learn](#)

ACTIVITY (30-45 MINUTES)

Challenge your students to complete the [Box Island: One Hour Coding](#) tutorial.

In the tutorial, students take part in a journey on Box Island, where they have to help Hiro (main character) to collect stars around the tropical paradise, where the goal in each puzzle is to collect 3 stars. In total, the tutorial consists of 20 logical puzzles where each is represented as a level. Note that you can select a proper age group before starting the tutorial.

Learn more about the tutorial and its coding concepts here: [Box Island Curriculum](#). Get the solution guide for the tutorial here: [Solution Guide](#).

Age and ability of students
It can be good to provide additional options for young and old students. Depending on the age and ability of your students, you might consider:

- For younger students (6-8 year olds), we suggest you break your class into pairs or very small groups (three to four students each) and ask them to complete the tutorial together.

- For older students or adults, we find that working independently is more effective. However, if you don't have a mobile device for each student, working in pairs or small groups also works well.

If a group or an individual finishes early, ask whether they have completed all 20 levels of the tutorial with 3 stars (best solution in all levels). If they still have some levels that have not been completed with 3 stars, ask them to go back and solve those levels with the best solution.

Monitoring progress during the activity
Ask every 15 minutes the following questions to gain insight into the students' progress:

- How many levels have you finished? [Good pace: 6-7 levels every 15 minutes]
- How many stars have you collected in total (visible on the world map screen in the app)? [Good effectiveness: Over 2 stars per level on average]

The first question monitors overall progress, while the second question monitors how effective the students have been in the puzzles they have solved.

Note that the journey represented in the tutorial's world map is designed in clock-wise fashion. This allows you to visualize and evaluate very quickly the progress of a student.

WRAP UP (5 MINUTES)

Debrief the activity. Ask the students for a final time how many levels they finished and how many stars they collected.

Celebrate and pass out certificates and stickers. Give each student a certificate with his or her name on it. Explain that you are spending one hour of coding today because this week is Computer Science Education Week, and millions of other students across the globe also have been learning one Hour of Code this week. Congratulate the students on being part of this worldwide movement.

Share photos and videos of your Hour of Code event on social media. Use #HourOfCode, @boxislandgame and @codeorg so your success can be highlighted!

ASSESSMENT (2 MINUTES)

Get the students together, and preferably form a circle standing or sitting, where each student shares his thoughts on the following questions:

- What did you like the most about this Hour of Code lesson?
- What skills did you learn today?

In this format, students can inspire and learn from each other, where the aim is to motivate them to learn more about coding.

Review briefly the power of knowing how to code, why it is important, and how they can use the skill as a superpower to create whatever they like!

BEYOND AN HOUR OF CODE

There are many ways to go Beyond an Hour of Code:

- Share the experience with the parents of the students
- If students particularly liked Box Island, they can try out the original version of Box Island in the classroom or at home. That version is included in the Box Island app and accessible from the main menu. Note that the original version contains in-app purchases.
- Explore other tutorials at https://code.org/learn
- Invite a computer science expert to your class. Sign up for a virtual classroom

Thank you for participating!