KUBO

Quick start guide

TO CODING WITH KUBO

KUBO is the world's first puzzle-based educational robot, designed to take students from passive consumers of technology to empowered creators. By simplifying complex concepts through hands-on experiences, KUBO teaches children to code even before they can read and write.

KUBO and the unique TagTile® programming language lay the foundations for computational literacy for children aged four to 10.

Getting Started

This Quick Start Guide explains what is included in your coding solution and introduces you to each of the basic coding techniques that your KUBO Coding Pack covers.

WHAT'S IN THE BOX

Your solution includes a KUBO Coding Pack, a KUBO Body Pack and a tube containing an illustrated Activity Map and a blank map to photocopy.

CHARGE YOUR ROBOT

It will take about two hours for the first full charge of your KUBO robot. When fully charged KUBO will run for about four hours.

TURN KUBO ON

Attach the head to the body to turn KUBO on. To turn KUBO off, pull the head and body apart.

KUBO's Lights

When you begin programming with KUBO, the robot will light up showing four different colors. Each color signifies a different behavior:

BLUE

KUBO is powered on and waiting for commands.

RED

KUBO has detected an error, or is low on battery.

GREEN

KUBO is executing a sequence.

PURPLE

KUBO is recording a Function.

KUBO's TagTiles®

In your Coding Pack you will see three sections.

1

Section one contains Route TagTiles and KUBO's head. These tiles are used to control forward, left and right movements, creating Routes for KUBO to follow. There are 14 forward, 6 right and 6 left Route tiles.

Route TagTiles

2

Section two contains Function TagTiles. These tiles are used to create Functions, Subroutines and Recursive Functions. There are two red and two blue Record Function tiles, and two red and two blue Play Function tiles.

Function TagTiles

3

Section three contains Loop TagTiles and parameters from one to 10. These tiles are used to program KUBO to repeat a sequence of route tiles. There are 2 Loop and 10 parameter tiles.

Loops

Use your Coding Pack to safely store and count your tiles at the end of each activity.

Coding Concepts

Coding is basically about putting together an increasingly complex series of instructions that control actions in a predetermined, logical way.

Your Coding Pack covers five coding concepts:

1. **Routes**
2. **Functions**
3. **Subroutines**
4. **Recursive Functions**
5. **Loops**

KUBO starts at the simplest level, by teaching students to create a code that controls basic movements: Go Forward, Go Left and Go Right.

1. Routes

Use the Route TagTiles® to lay down a route for KUBO to follow on the activity map. Place KUBO on the first TagTile. Make sure you align KUBO's wheels accurately to keep the robot on track. Watch KUBO move.

NOTE: KUBO does not move backwards.

KUBO will always move one additional step forward at the end of the route, before coming to a stop.

Access The Coding License at KUBO.education for a series of Lesson Plans and activities that introduce Routes to your students. You can also watch our short video tutorials.

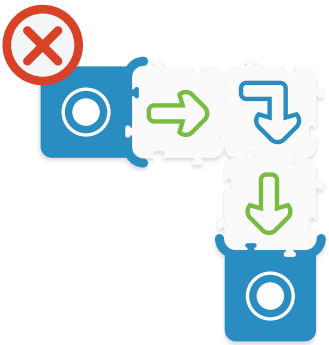
2. Functions

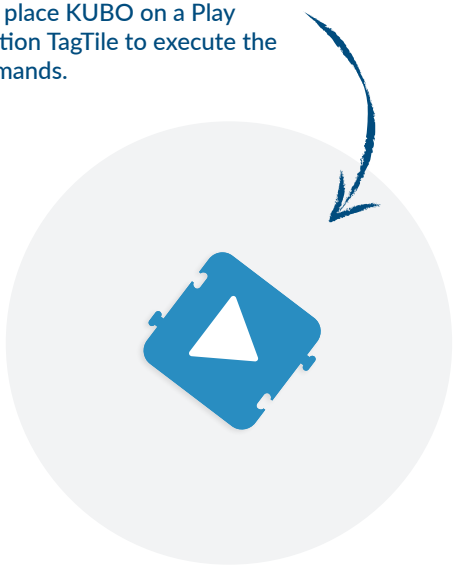
Functions combine single elements of code into a memorized sequence. The Function tiles allow students to save sequences so they can be used as many times as needed. These tiles can also be used to create Recursive Functions and Subroutines.

Save a sequence by encasing Route tiles within two Record Function tiles.

Now place KUBO on a Play Function TagTile to execute the commands.

NOTE: Route tiles should now be laid out in a straight line.

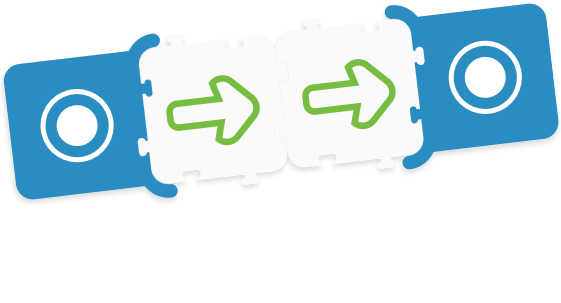




3. Subroutines

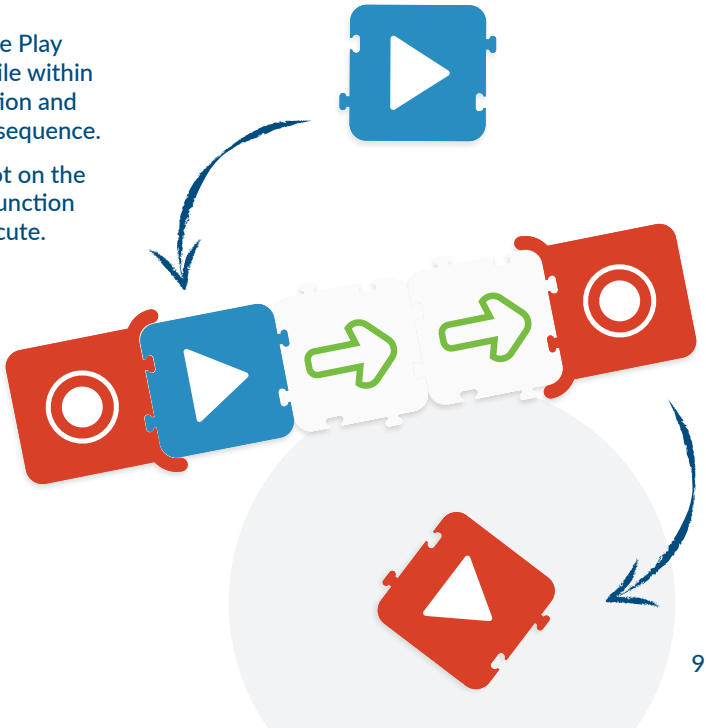
A Subroutine is a sequence of code within a sequence of code. Subroutines are used to make code shorter and easier to manage.

First, place a sequence between two Record Function TagTiles® and have KUBO save the sequence.



Then, place the Play Function TagTile within another Function and save the new sequence.

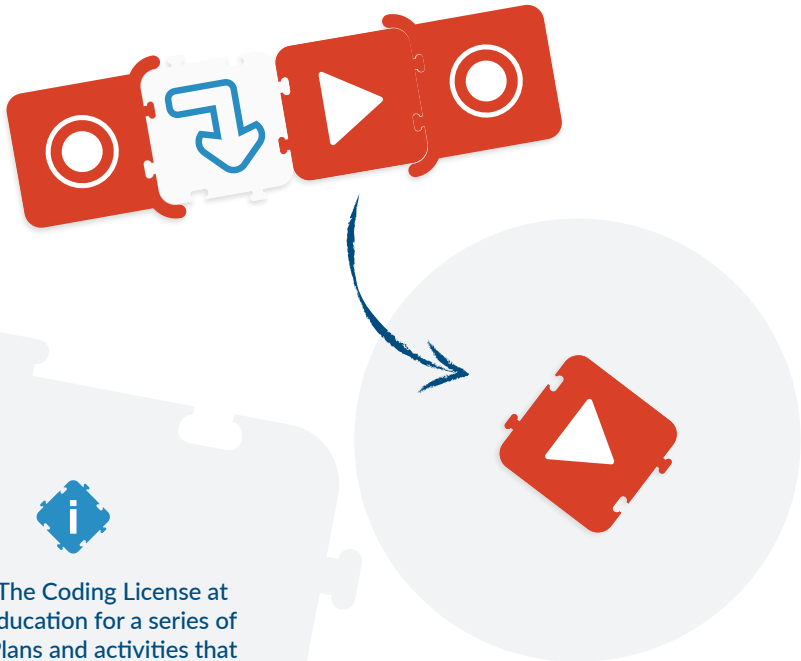
Place the robot on the second Play Function TagTile to execute.



4. Recursive Functions

A Recursive Function is a Function that will repeat itself indefinitely. Program a Recursive Function by placing a Play Function TagTile within the Function you want KUBO to execute.

Have KUBO record the sequence. Remove the Play Function from the Function and place KUBO on it. Watch, as KUBO executes the sequence continuously. To stop KUBO, separate the head from the body.



Access The Coding License at KUBO.education for a series of Lesson Plans and activities that introduce Functions, Subroutines and Recursive Functions to your students. You can also watch our short video tutorials.

5. Loops

In order to create efficient programs, children need to learn that a lengthy sequence can be created by repeating selected steps more than once. In coding, Loops are used to repeat Functions a preset number of times.

To make KUBO repeat a sequence more than once, enclose the commands within two Loop TagTiles and slot a parameter of one to 10 in the space provided. In this example, KUBO will repeat the sequence four times.

Access The Coding License at KUBO.education for a series of Lesson Plans and activities that introduce Loops to your students. You can also watch our short video tutorials.

Beyond Coding

KUBO is designed so that students not only get to grips with coding and computational literacy; they also develop other important skills that prepare them for the future.

The Coding License, available at KUBO.education, covers many STEM (Science, Technology, Engineering and Math) curriculum targets. It also enables student to develop skills like collaboration, critical thinking, creativity and communication:

Cross-curricular learning outcomes

DEBUGGING

No code is perfect the first time around, and identifying errors or room for improvements are among the most important skills students need to become good programmers. Mistakes are essential to the process of learning because they encourage reflection and problem solving. Since KUBO's feedback is immediate, students find it easy to find faults and debug them by switching out and rearranging TagTiles®.

COMMUNICATION

Because KUBO is a hands-on, tactile and manipulative tool, it facilitates communication between students and teachers. You will witness how students' coding vocabulary and conceptual understanding develops, as they verbalize the behaviors they program and can literally observe. KUBO reaches beyond language barriers.

CREATIVITY

With KUBO's open-ended challenges, students can each develop their own unique solutions. The activity maps also allow students and teachers to create endless stories, challenges and activity ideas. And the physical TagTile concept is a rich visual manipulative with endless possibilities.

COLLABORATION

KUBO activities require students to work together to achieve their goals, and the hands-on approach allows students to challenge each other, give feedback and share ideas about how to solve problems. Collaboration is one of the most highly valued skills by today's employers.

CRITICAL THINKING

Critical thinking is the skill that differentiates creators of technology from consumers of technology. KUBO helps students develop a way of thinking that asks what the problem is, and provides them with the versatility to identify many ways for the problem to be solved.

By enabling students to learn and practice all of these skills, KUBO builds confident children who are able to design and develop solutions, making them the innovators of tomorrow.

KUBO.education

VISIT KUBO.EDUCATION TO:

- View or download The Coding License, for 12+ hours of lesson plans and activities for students from four years
- Watch Getting Started tutorials for a quick introduction to KUBO coding concepts
- Find out where to buy KUBO
- Access technical support
- Contact us *yourfriends@kubo-robot.com*

QUICK START GUIDE TO CODING WITH KUBO

Easy instructions to begin TagTile® coding

Take care of KUBO

FCC Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

ISED Compliance

This device contains licence-exempt transmitter(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).

Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites;exposition aux radiations IC CNR-102 établies pour un environnement non contrôlé. Cet émetteur ne doit pas être situé ou fonctionner conjointement avec une autre antenne ou un autre émetteur.

Hereby, KUBO Robotics ApS declares that the radio equipment type KUBO20 is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address: www.kubo.education

FCC ID:	2AOWV-KUBO-20
IC:	25509-KUBO20
Bluetooth:	2402MHz-2480MHz, -0.82dBm
RFID:	13.56MHz, -15.93dBuA/m
Software version:	20
Accessories:	Charging cable for KUBO robot. TagTiles.
Operational information:	This Quick Start Guide.
Brand:	KUBO
Model:	KUBO20

Do not disassemble KUBO. Doing so will void any warranties, implied or otherwise. Be careful when handling KUBO. Applying excessive force, or dropping it may cause permanent damage. To reduce the risk of fire and burns, do not attempt to open, disassemble or service the battery pack. Do not crush, puncture, short external contacts, expose to temperatures above 60°C (140°F), or dispose of in fire or water. Battery chargers used with the device are to be regularly examined for damage to the cord, plug, enclosure and other parts and, in the event of such damage, must not be used until the damage has been repaired. Battery is 3.7V, 800mAh (3.7*0.800=3Wh). The max operating current is 1300mA.

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www.kubo.education