Spreading the Joy of Science CODING KIT



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Twin is a robotics and coding kit that develops creativity in a fun and instructive way.

It feeds the curiosity in our nature, shows how simple and easy-to-understand science is, and encourages us to do more.



"Science is to apply science; science is to know thyself." Yunus Emre

Twin consists of electronic modules that can be attached with magnets. It requires no risky process of welding. We aim to make the science and technology popular and develop the sense of know-how for the public.

With Twin kits, children and teenagers are able to develop the latest technology of robotics and autonomous cars by simple attachments. With the projects we provide, they will be able to develop their own unique projects to provide solutions to world problems. At advanced stages, we shall provide the kids with the scientific knowledge of the projects they have performed to complement the "learning by doing" concept.

The kids that play with Twin;

- Have creativity,
- Have dexterity,
- Have their best dreams realized!

Kids can also enjoy playing with their LEGO® bricks to the fullest because Twin is compatible with LEGO® bricks!

TWIN AS A SOCIAL PROGRAM: Latest Technology to the Remotest Rural Areas

We believe that the human knowledge and love grow by sharing. Twin not only presents the most advanced technology to the kids, but it also delivers it to those in the most disadvantaged echelons of the society. Twin implies being two-winged by heart and mind. We dream of spreading the Twin concept of creating and sharing to the world. Twin as a social program works within the scope of a global Science Movement campaign of YGA (Young Guru Academy) worldwide, in partnership with universities, education and training centers as well. By purchasing this kit, you've contributed to the Science Movement Campaign extending to the remotest villages.

Twin is a start-up founded by YGA graduates. It has been developed with the guidance of Turkey's first science Nobel laureate **Prof. Aziz Sancar**, Harvard & MIT **Prof. Mehmet Toner** and **Prof. Doğan Cüceloğlu**.

CODING KIT





Place the modules next to each other to connect them



Energy moves in the direction of arrows. When connecting the modules, make sure the arrows point towards the same direction

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Modules connect to each other with the magnets in them

Twin modules are compatible with LEGO® bricks!

x C

Color Codes of Modules

power

Power modules come first and provide power for the circuit to work. input

Input modules send signals to the module that comes afterwards.

logic/transmission

These modules allow you to expand and change the direction of your circuits, as well as controlling Twin modules.

output

Output modules produce output such as sound, movement, and light.

The coding kit contains logic/transmission and output modules. You can create circuits by connecting blue modules after the red modules.



Twin modules have been designed to be compatible with LEGO[®] bricks. You can prepare your circuit and combine it with LEGO[®] bricks as you wish.



- The coding module has 3 input and 3 output connectors.
- To use the blue modules for output such as sound, motion or light, use the output connectors.
- Yellow modules such as light, sound or proximity sensors are connected to the input connectors.
- The connectors have numbers next to them. These indicate the position of the modules.

REAL LIFE EXAMPLES





Computer



You can download the **Twinner** app from the **App Store** or **Google Play Store**.













Did you know that an ultrasonic sensor is similar to a bat?

- The ultrasonic sensor measures the distance of an object in front of it.
- Like a bat, the sensor sends sound waves and measures how much time it takes for the waves to return. The module uses this value to calculate the distance.
- It can measure distances between 3 400 cm.



R = Receiver Receives the sound waves

T = Transmitter Transmits the sound waves

> The ultrasonic sensor is connected to the Twin coding module as shown







Did you know that sound is vibration?

- The buzzer module converts electrical signals to vibrations and to sounds.
- Your code will allow the buzzer to play your songs. We've already prepared some for you!

buzzer



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REAL LIFE EXAMPLES









Did you know that robot arms have servo motors?

- Rotate the servo motor to any angle you want in 180 degrees.
- Choose any angle you want using the coding module.
- Use the different servo accessories for different types of experiments!

servo motor

Switch the module to coding when using it : with the coding module .

> Switch the module to analog when using it without the coding module



"Sweep" causes the motor to move back and forth continuously



REAL LIFE EXAMPLES













Curious About Coding?

The Twin coding module can be connected to various electronic modules with it's 24 digital / pwm & analog input and output pins. To connect to those modules, you can use the kit's jumper cables.

D9- /A9

D8 /A8

twin

D6- /A7

D4 /A6



Components such as motors, LED's, and speakers that convert energy to output are connected to the Digital Output Pins







D10- /A10

7.1

7.2 •



Digital Input Pins.

Sensors that send input, such as light, sound, and infrared, are connected to the Digital and Analog Input Pins



Connect the coding module to your computer

Download the Arduino IDE program from the Arduino website https://www.arduino.cc/en/main/software

Install the Arduino IDE program



Click on the **Tools** tab, and select the board **Arduino Leonardo**



Choose Arduino Leonardo port that starts with COM from the Tools tab



You are now ready to write your own code. To use full properties of the card, download the Twin library from **twinscience.com**

Warnings

- The kit contains chemicals and/or pieces that can be dangerous if used incorrectly. Read the warnings on the packaging and guide for safe use.
- The box and guide contain important information and warnings. Keep them for correct usage.
- This product contains small magnet(s). Ingested magnets can stick to a person's intestines and cause serious injuries. Urgent medical help should be sought if magnets are swallowed or inhaled.
- Twin modules contain small components. Children under 3 should not be allowed to play with or be close to the kit.
- · Some Twin modules have long cords which create a choking hazard.
- Do not connect Twin modules to an electrical socket or to a source of alternative current.
- Keep conductive materials away from sockets and the circuit.
- Turn the circuit off when not in use.
- Do not use Twin modules near water or other liquids. Do not use the modules inside a liquid and avoid spilling liquids on the modules.
- Do not use the modules in extreme conditions. Do not use the modules in very hot, very cold, very humid, dusty or sandy places.
- Make sure the modules are clean before using them. The magnets can stick to small metallic pieces and prevent modules from connecting.
- Make sure the connectors of the modules are clean if there are issues with modules' connections.
- Some modules may heat up due to how they are used. If the modules reach extreme temperatures reassess the circuit and stop using the module in question.
- Remove any broken or damaged modules from the circuit and stop using those modules.
- Incorrectly connecting the ultrasonic sensor will damage the circuit permanently. Make sure you insert the sensor as shown in the guide.

Electronic Waste 🕱

Warning! Pieces that have been marked with this symbol contain components which are harmful to nature and to people and should not be discarded alongside other waste. If discarded improperly, the process might cause harm and will be subject to legal punishment. These components should not be used incorrectly. It is forbidden to remove these electrical and electronic components from the toy or using a damaged product. These actions may be harmful.

Electrical and electronic waste must be collected separately and should be passed to designated waste collection sites. Alternatively, you can get in contact with your place of purchase and ask for a replacement. Users of the product play a vital role in the collection and discarding of those which have completed their life cycle. For further information, contact your local authorities.

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Cleaning the Modules

Only clean the Twin modules when they are not connected to electricity and only with a dry or slightly damp towel.

Frequently Asked Questions

- One of the modules isn't working. What should I do? Check if the module has been connected correctly. Clean the connectors as instructed in the guide. If it still isn't working, you can send a mail to **destek@twin.com.tr**.
- Can I connect Twin modules to building blocks?
 Twin is fully compatible with building block toys. You can use them to create as many projects as you wish.
- Where can I download the mobile app? You can download it from App Store or Google Play Store. Do not forget to create an account to use the application fully.
- My coding module can't connect to my phone. What should I do? Make sure your phone's Bluetooth is on and it is discoverable.
- Where can I find sample projects? You can access all project instructions, videos, and codes from the Twin mobile app, website, YouTube channel and social media accounts.
- How can I program the module using my computer? You can connect the module to your computer via the micro USB cable included and use the Arduino IDE to program it.
- How can I reset the coding module? Press the "RESET" button to reset the module.
- How can I use the Twinner app after programming the module with the Arduino IDE? You will need do redownload the program at twinscience.com in order to use the Twinner app again to program the module.
- I receive an error message when I upload my code to the module through the Arduino IDE. What should I do? Hold the Reset button and click Upload again. When you see the Uploading message, stop pressing Reset. You may need to repeat this multiple times.

Reach Us

You can reach to us via e-mail: destek@twin.com.tr

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