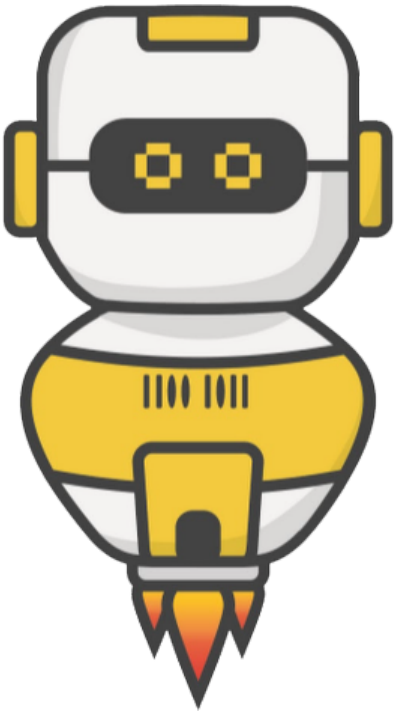
Mission 2:
Introducing CodeX

Student Workbook

Mission 2: Introducing CodeX ✓

Introduction to CodeX where you get your device connected and run some code!

Greetings!



You are at the beginning of an exciting journey. I'll be your guide as you explore coding with your CodeX, using Python.

Why should you learn coding?

- It is more than robots
- It is more than computers
- It is more than laptops or tablets
- It is more than cell phones
- It is more than games

Computer chips are making lots of things we use smarter.

But ... everything a computer does is coded by people like YOU.

Go to the Mission 2 Log and fill out the Pre-Mission preparation.

Mission 2: Introducing CodeX

- Go to https://make.firialabs.com/ and log in.

- Click **NEXT** and start your coding journey with Mission 2.

Objective #1: Behold the CodeX

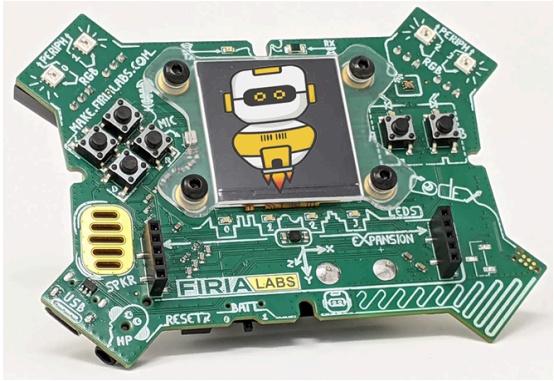
What is CodeX?

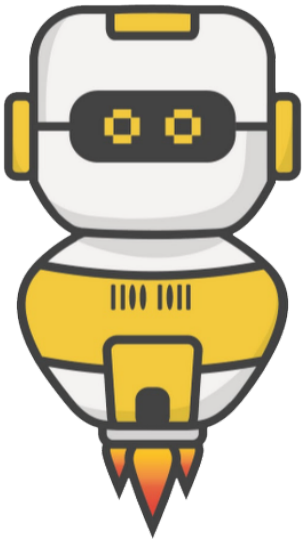
It is a powerful embedded computer.

That means it has a lot of stuff on that little circuit board.

It has:

- Lots of sensors
- Bright, colorful lights
- A speaker
- Buttons to press
- A colorful screen
- And more!





DO THIS:

The instruction panel has 3 words that can be added to the toolbox.

Click on at least one of these words.

display, LEDs, Audio,

- Fill out Objective #1 in the Mission Log

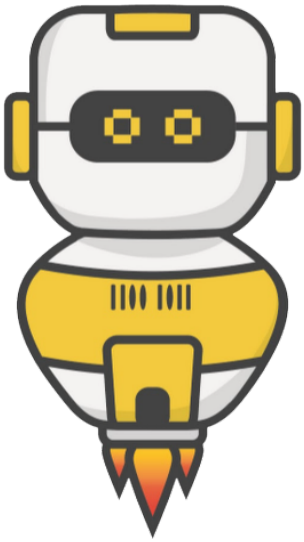
Objective #2: Static Electricity

Be careful with your CodeX.

- Static electricity ⚡can build up inside you when you walk across a carpet, or other similar things.
- Static electricity ⚡ causes a shock when you touch something.
- It can shock the CodeX if you touch it.
- This is not good for CodeX!

Follow these guidelines to keep your CodeX static-free

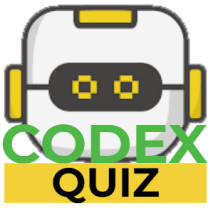
- Hold CodeX by its edges
- Be gentle
- Keep CodeX in its case when you are not using it
- Touch a desk or book before using CodeX



DO THIS:

Use the simulator to look for three lightning bolts ⚡ on the CodeX.

- Close the instruction panel
- Use camera controls to rotate the CodeX in the scene
- Find all three ⚡and click on them
- One is on the back, so make sure you rotate all the way around



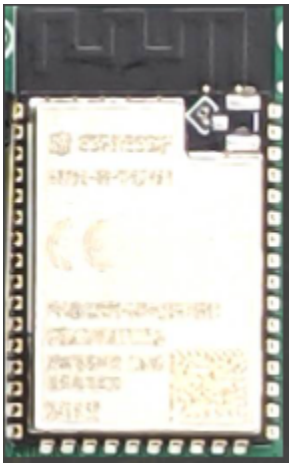
Mission Quiz

Test your skills by **taking the quiz**.

Objective #3: Find the CPU

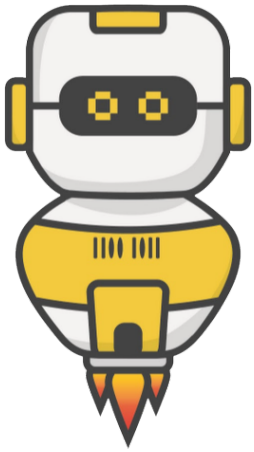
Where does the code run? On the CPU. The CPU is an amazing device! The CPU is:

- Central Processing Unit
- The “brain” of CodeX
- Interacts with other computer parts (called peripherals)
  - Lights
  - Screen
  - Speaker



CPU has many responsibilities:

- Collects data
- Issues commands
- Pushes display information
- Stores information
- And many more things



DO THIS:

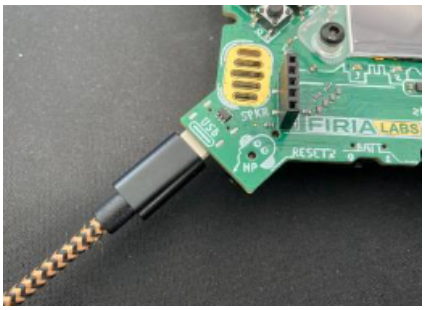
- Click on 

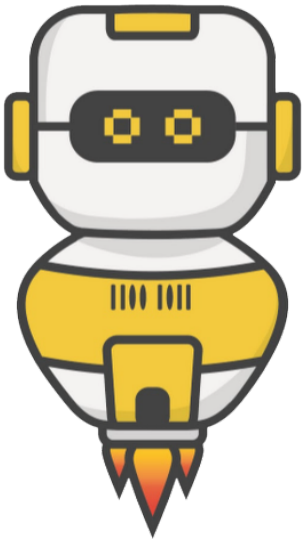
to add it to your toolbox
- Write about the CPU in the Mission Log
- Close the instruction panel
- Use the camera controls to rotate the CodeX and find the CPU
- Click on the CPU

Objective #4: Connect the USB

A USB cable is used to connect CodeX to your computer or laptop.

- The USB cable lets your computer communicate with the CodeX.
- It provides 5 volt DC power to the CodeX.



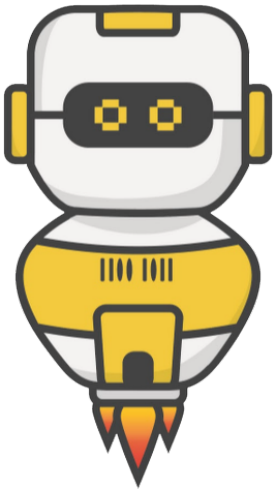


DO THIS:

- Close the instruction panel
- Use the camera controls to rotate the CodeX and find the USB port
- Click on the port

Objective #5: Link to CodeSpace

The CodeX must be linked to your browser before it can be used with CodeSpace.

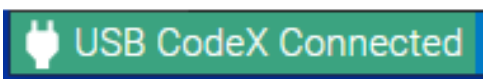


DO THIS:

- Gently take out your CodeX
- Connect the CodeX to your computer with a USB cable
- Close the pop-up window
- Click on the red message at the bottom of the window

- Select CodeX from the pop-up window
- Click the 

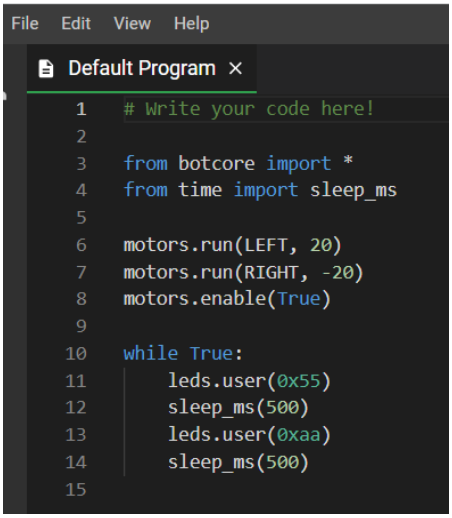
.
- Notice that the message now says

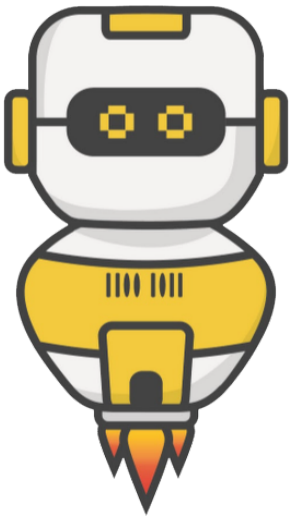


Objective #6: Save the Code

Time to create a file!

- When you type code into the **text editor** panel, it is automatically saved in the CodeSpace cloud!
- Your code is stored in a file
- You give the file a name, which should help you know what the code does

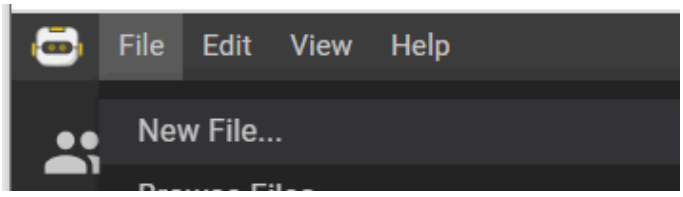




Create a new file for each mission.

DO THIS:

- Click the **File** menu button
- Select “New File...”
- Name the file **Heart1**
  - *no spaces in a file name*
- Click **Create**



Objective #7: The CodeTrek

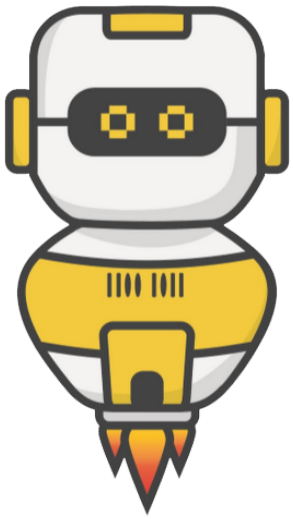
The CodeTrek icon is at the bottom of the instruction panel.

The CodeTrek is a **CodeSpace** tool that gives you:

- A starting point for your program.
- Information about lines of code you need to write.
- Explanations of coding topics.
- Program holes (**#TODOs**) for you to fill in.

 # TODO -- The words "to do" put together

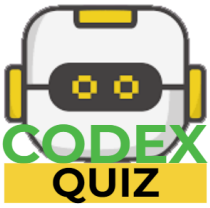
- A `# TODO:` tells you what you need to do to complete the program.
- It tells you there is still work **TO DO**!!
- If you haven't typed in code where there is a `# TODO:` then you haven't completed the mission.



Check out CodeTrek

DO THIS:

- Click on the CodeTrek icon at the bottom of the instruction panel
- Read both messages
- Close the CodeTrek



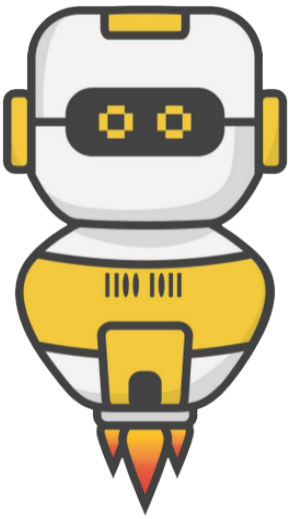
Mission Quiz

Test your skills by **taking the quiz**.

Objective #8: Show Some Heart!

Important programming notes:

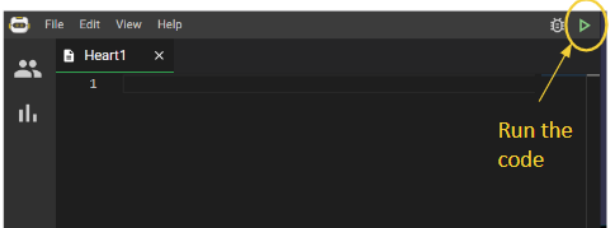
- Your code is case sensitive
- That means
  - lower-case needs to be lower-case
  - upper-case needs to be upper-case
- Punctuation is important
  - Indenting matters
  - Use a period . when needed
  - Match parenthesis ( )
  - Use a colon : where needed

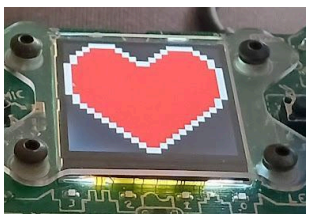


DO THIS:

Time to type!

- Make sure your **Heart1** file has no code
- Click the icon to open CodeTrek
- Type the two lines of code EXACTLY as you see it
- Run the code



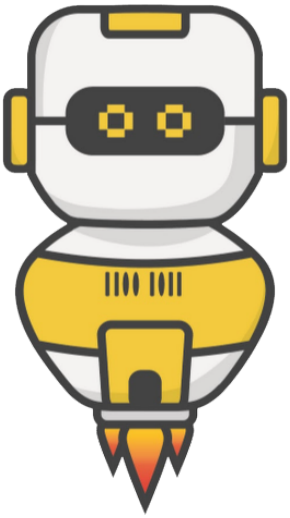


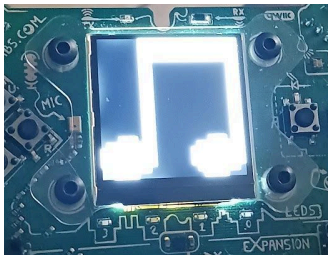
Objective #9: More Images

The CodeX comes with more than one image ready for you to display

- Find the images that are built-in
- Click on 

- Then scroll down in the toolbox until you find the list of images





Find out what images you can use

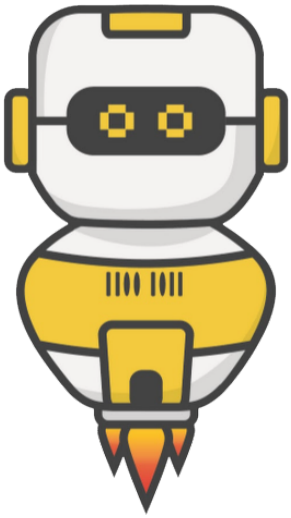
DO THIS:

- Go to the Mission Log and write down three images that interest you.
- Go to your **Heart1** file.
- Change the image from **HEART** to **MUSIC**
    - Use CodeTrek if you need help
- Run the code.
- Change the code to display another image.
    - Repeat for as many images as you want
- Run the code after every change

Objective #9 is complete!

Mission Complete

You have completed the second mission.



Do this:

- Read your “Completed Mission” message
- Complete your Mission 2 Log
    - Post-Mission Reflection
- Get ready for your next mission!

Post-Mission Reflection

The CodeX can do a lot of things, and even connect to the world around it.

You can connect it to more sensors, more lights, motors, and more!

What projects can you imagine using the CodeX for?

_____

_____

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