U2-2.1 Let's explore Edison's outputs

What do computers do? Computers process information. This means that computers take information from somewhere and do something with that information. For example, you can give a computer two numbers and tell it to add them together. The computer can then add those numbers and show you the result.

This cycle of information coming in, the computer doing something with the information and then creating some result is called the input-process-output cycle.

Jargon buster

Inputs are the information and instructions that you give a computer.

A process is what the computer does with a computer program full of information and instructions. This is sometimes called 'running' the program.

Outputs are the results you get from a computer. What the computer displays, or how the robot behaves, are the outputs you get based on the information and instructions you gave the computer.

We call this process of inputs going into a computer, that computer processing the information, and then generating some type of output the input-process-output cycle.

The input-process-output cycle isn't only used in computers. You can see this cycle in action in your daily life too.

Baking a cake is a good example. You input ingredients into a pan and put that pan into the oven. The process of baking then happens in the oven. After a while, the output of a cake is ready!
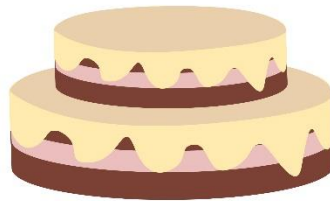
Inputs, outputs and Edison

When you write a program for your Edison robot, you are telling the robot what you want it to do by giving it inputs. Edison's microchip then processes the information to tell the robot what to output.

Your Edison robot has three main types of outputs: outputs using the motors, outputs using the LEDs and outputs using sounds. In EdScratch, the blocks related to Edison's main outputs are organised into three different categories: Drive, LEDs and Sound.

1. Look at the blocks in the Drive, LEDs and Sound categories in EdScratch. Which category contains the code blocks you would need to input into a program to get Edison to generate each output? Match each output to the category where you can find the blocks you would need.

Output | Category

Turn Edison's lights off 🟣

Play a musical note 🟣

Spin Edison right 🔵

Drive 🔵

LEDs 🟣

Sound 🟣

Task 1: Flash and beep

Edison has two red LED lights. When you turn Edison on, you can see these two LEDs begin to flash.

Edison also has a special bit of tech which you can see just to the left side of the round button on the top of the robot. This is a buzzer and a sound sensor all in one. It can detect noise, but it can also make noise!

For this task, you need to write a program which will have Edison use both the LED and buzzer outputs. Write a program in EdScratch using eight blocks which tells Edison to do the following things in sequence:

☐ turn on the left LED light
☐ beep
☐ turn off the left LED light
☐ beep
☐ Turn on the right LED light
☐ beep
☐ Turn off the right LED light
☐ beep

Download and test your program with your Edison robot.

2. Did the program work the way you expected? Could you observe the robot perform each step of the program?
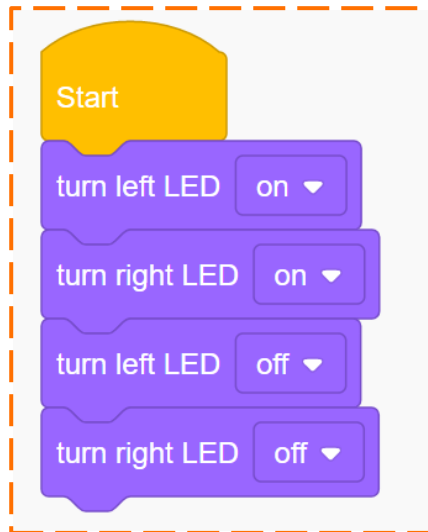
Sample student answer: The robot did all the steps, but it was really fast, so it sort of seemed

like it wasn't doing them in order but all at once.

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Task 2: Make Edison blink

Some of Edison's outputs, like turning a LED on or off, happen very quickly. In fact, this can happen so fast, it can be really hard to see.

Try writing the following program in EdScratch:

Download it and run it with your robot. Can you see Edison blink?

Because the robot flashes its LEDs when it is in standby mode, it will be really hard to see this program in action.


Why is that?

Edison moves through each EdScratch block one at a time, but the robot is able to process each block very quickly. Computers can process information very fast – that's one of the things that makes them so useful!

If you want Edison to pause after it completes one block before going onto the next block, you have to tell it that.

One of the EdScratch block categories is the Control category. The blocks in the Control category allow you to control the flow of your program. One of the blocks in this category is the wait block:
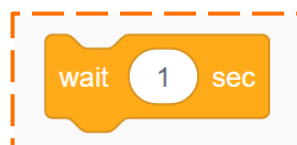
This block tells Edison to wait the amount of time you specify before moving on to the next block. **Let's try** using this block in a program.

Modify the 'blink' program from before but use this new control block to make the program work **better. You want a program where it's very easy to see Edison 'blink'. Experiment using** at least one wait block. Test using wait blocks in different places in your program to see what works best.

3. What does your program look like? Which blocks does it use, in which order? Write your program below. Be sure to include the input parameters you used.
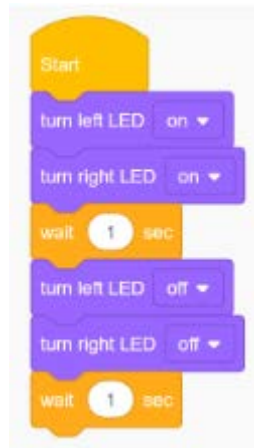
Mini challenge!

When a person blinks, what happens? Their eyes start to open and then...

Look at your blink program. Can you adjust your program to make it more like a blink?