| Guess the Sequence! |
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Preparation:

The only thing needed is the TAS-Hub2 Lego robot. No laptop or MindStorms required. In case you need to see the code, the program files in the Lego hub box are backed up: Program1.lms, Program2.lms, Program3.lms, Program4.lms, Program5.lms, Program6.lms in this folder [7th December Activity 1 draft plan and files - Google Drive](https://drive.google.com/drive/u/1/folders/1XnFZcZ534s7JHnxX0yqZm2ljNd4M0lXX).

The aim of this activity is looking inside the box, understanding what is happening. This activity is for children to do in a group. You can show the challenge solution page to the children, one solution after another solution by folding the paper along the lines.

At the beginning, introduce what the four sensors are as a warming up. Then explain to the children that we have six challenges to overcome in that we need to find the sequences of the operations when the four sensors are used, once each. We provide five colours for the colour sensor. The only motor position that they need to twist is 180 +/- 20 degrees. Please allow a couple of seconds sometimes for the hub to respond properly.

When each of the programs starts, a frog sound will be played. When a wrong operation is performed, we will get a beep and a cross sign on the hub to represent a failure, and the robot will reset itself, so we need to start over from the beginning. Only when we perform the right operation in the right sequence until the end, we will get the celebration sound and a smiley face on the hub that represents a success. In each sequence, for every step that we do right, we can see the step number (1, 2, 3, 4) on the hub.

We will show the children how to unlock program 1 as an example, and it is better not to look at the solution, so the children know how to start over again if they guess wrong. Basically, they need to remember the steps (1 or 1-2-3…) that are correct and start over with them. Make sure that they all catch up with the understanding.

Then let the children unlock other programs and ask them “Can you work them out?”

Next, press the right arrow on the hub and proceed to challenge 2 to 6 in turn and leave the robot to the children each time. The children will try to work out what is happening in the hub box from the other 5 challenges. Please encourage them, prepare to show them the solution, and show your surprise when they work out a new challenge. We should show them the solution of each challenge in a fun way when there is silence stuck for more than one minute, so they can proceed to the next one.

Finally, ask, encourage, and discuss with the children about the Points to be taken:

Building a robot can be fun as long as you know what is happening in the box.

| 1 | 1A picture containing text  Description automatically generatedA black and white camera  Description automatically generated with low confidence2A close-up of a camera  Description automatically generated with medium confidence3A picture containing electronics, projector, microwave  Description automatically generated4A picture containing electronics, projector  Description automatically generated |
| --- | --- |
| 2 | 1A close-up of a camera  Description automatically generated with medium confidence2A picture containing electronics, projector, microwave  Description automatically generated3A picture containing text, light, electronics  Description automatically generatedA black and white camera  Description automatically generated with low confidence4A picture containing electronics, projector  Description automatically generated |
| 3 | 1A picture containing electronics, projector  Description automatically generated2A picture containing text, light, outdoor, building  Description automatically generatedA black and white camera  Description automatically generated with low confidence3A picture containing electronics, projector, microwave  Description automatically generated4A close-up of a camera  Description automatically generated with medium confidence |
| 4 | 1A close-up of a camera  Description automatically generated with medium confidence2A picture containing electronics, projector, microwave  Description automatically generated3A picture containing electronics, projector  Description automatically generated4A picture containing text, building, red  Description automatically generatedA black and white camera  Description automatically generated with low confidence |
| 5 | 1A picture containing electronics, projector  Description automatically generated2A close-up of a camera  Description automatically generated with medium confidence3A picture containing text  Description automatically generatedA black and white camera  Description automatically generated with low confidence4A picture containing electronics, projector, microwave  Description automatically generated |
| 6 | 1A picture containing electronics, projector, microwave  Description automatically generated2A picture containing text, electronics, loudspeaker  Description automatically generatedA black and white camera  Description automatically generated with low confidence3A close-up of a camera  Description automatically generated with medium confidence4A picture containing electronics, projector  Description automatically generated |

A picture containing electronics, projector

Description automatically generated**?**A close-up of a camera

Description automatically generated with medium confidence**?**

**Guess the Sequence!**

Aim: looking inside the box, understanding what is happening

**?**A picture containing electronics, projector, microwave

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