Healthy Lunch-Bot Program Each Other (PEO) Activity Quick Guide (LKS2)

First choose roles

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Designer

Designer places the items on the grid and plans the route the Robot will take to get to them.

Writer

Writer records the steps on a whiteboard/piece of paper.

Robot

Robot follows the instructions as written down.

How about swapping roles as you go, so that everyone has a turn?

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Challenge 1 – collect the wraps!

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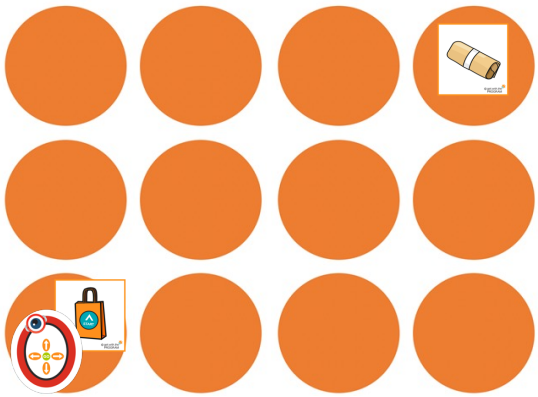
Can you move across the kitchen to collect the wraps for today's lunch bag?

1. **Designer:** Place the lunch bag for 'start' and the wrap for 'finish' anywhere on the grid. Use the practice robot to plan or design the route (algorithm) the Robot needs to follow to get across the kitchen to the wraps.
2. **Writer:** Record the route (algorithm) the Robot needs to take on the whiteboard using forward, left and right arrows.
3. **Robot:** Follow the instructions on the whiteboard to test the algorithm. You must follow the instructions exactly, even if you know they are wrong – you might go off the grid! If this happens, don't worry! Work with the Designer and Writer to adjust (debug) the algorithm and try again!

Example grid layout:



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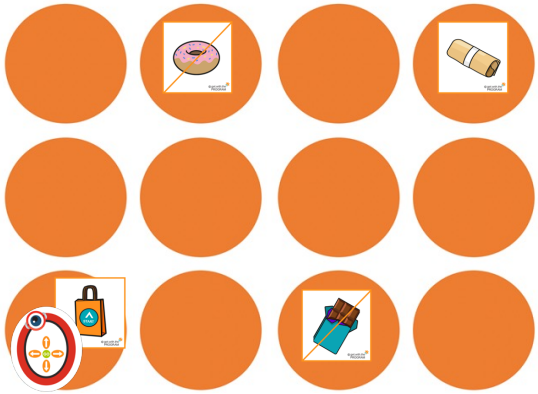
Challenge 2 – avoid items

There are some items which we only want to eat as a treat every so often, so which aren't OK for today's healthy lunch. Can you program the Robot to miss these items?

1. **Designer:** Choose where to add in the 'not OK' items. Plan or design the algorithm as before, making sure to go around the 'not OK' items to get to the 'finish' item (the wrap).
2. **Writer:** Record the algorithm on the whiteboard using forward, left and right arrows. It will probably be a bit more complicated than last time!
3. **Robot:** Use the whiteboard to follow the algorithm to test it. Did you go wrong? Debug if needed and try again.

Example grid layout:



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Challenge 3 – creative coding!

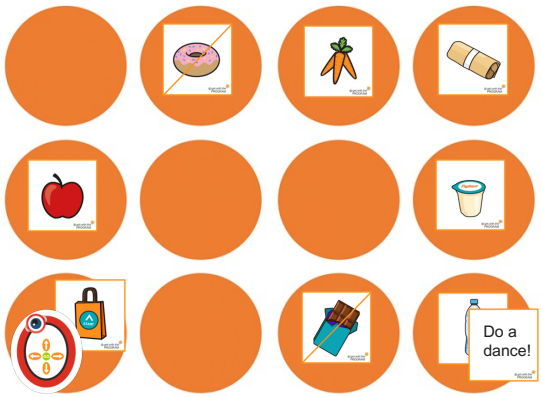
Now, can you use your imaginations to think of some other things to include in your algorithm?

- Maybe you can add in some other food items for our healthy lunch today, and design a route for the Robot to collect them all?
- Could you create a specific instruction to 'pick up' items? What would this look like in the algorithm?
- Maybe the Robot can jump over 'not OK' items?
- Maybe they should do a happy dance when they've successfully collected the 'OK' items?

What other creative coding can you think of?

1. **Designer:** Plan what steps to add in and where in the algorithm. You can use one of your blank squares to write/draw on, or cut up some paper.
2. **Writer:** Record the algorithm on the whiteboard – make up new pictures for the new actions.
3. **Robot:** Use the whiteboard to follow the algorithm to test it. Debug if needed and try again.

Example grid layout:



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Extension challenges

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These extension challenges build towards Scratch programming and use KS2 key terms to do it! Here is some information about the terms

Repetition

Repetition is looping or repeating sections of an algorithm so the steps can be reused.

Selection

Selection is making a choice to take a path in the algorithm, based on other information you have.

Input

Input is when you have some information that comes into the algorithm.

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Extension challenge 1 – repetition

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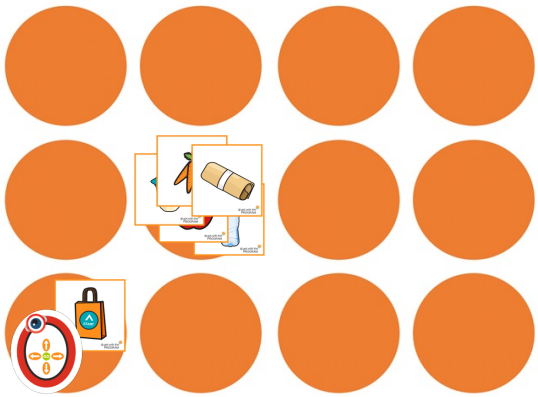
For this challenge, we are going to put all the items for today's healthy lunch in one place, and program the Robot to collect them one by one and bring them back to the start.

1. **Designer:** Can you program the Robot to do this? The Robot can only carry one item at a time so will need to return to repeat the instructions some more times.
   A loop that is repeated like this is called repetition.
2. **Writer:** Record the algorithm on the whiteboard using forward, left and right arrows and including a repeat instruction (think about what this might look like).
3. **Robot:** Use the whiteboard to follow the algorithm to test it. Did you get there and back without any problems? Don't worry if it went wrong – debug and try again!

Example grid layout:



Hint: What position does the Robot need to be in at the end before it can repeat the algorithm?

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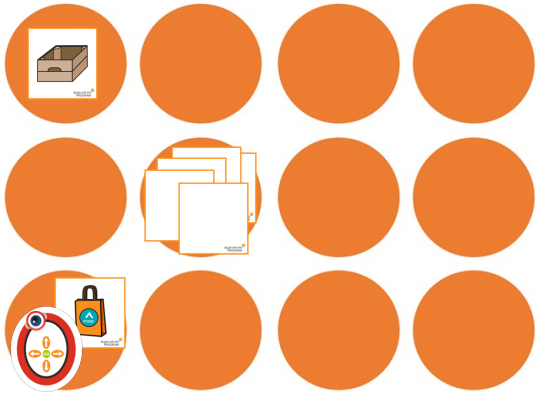
Extension challenge 2 - selection

For this challenge, can you help the Robot make the right choice when deciding between two options?

1. **Designer:** Shuffle the cards and lay them face down on one spot somewhere on the grid. As before, you will need to plan the route the Robot should take to get to the items. The Robot will pick up the items one by one – if an item is okay for today's healthy lunch, the Robot needs to take it back to the 'start' lunch bag. If not okay for today's lunch, the Robot needs to take it to the box to put away as a treat for another day.
2. **Writer:** Record the algorithm as planned out by the Designer on the whiteboard using forward, left and right arrows. When we get to the cards, you will need to include 'pickup' and 'selection' instructions. Choose how you will represent this 'IF' step in your instructions.
3. **Robot:** Use the whiteboard to follow the algorithm to test it. Don't forget to test both paths! Don't worry if anything goes wrong – debug and try again!

Example grid layout:



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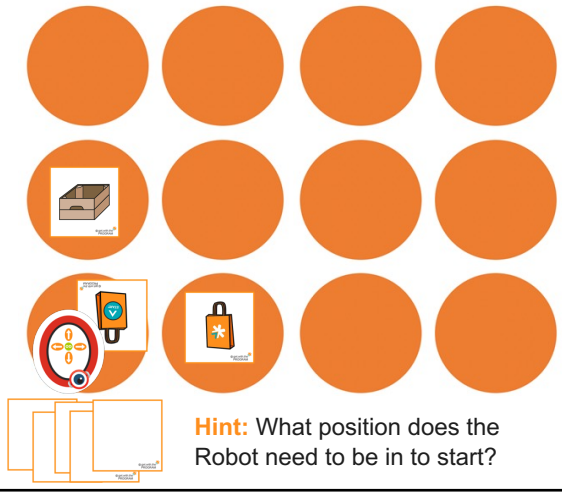
Extension super challenge – with added input

This challenge builds on the previous two extension challenges (repetition and selection), with added input:

For this challenge the Designer or Writer is going to be in charge of input – decide who it will be before you start. When the algorithm begins, you will need to stand next to the start and hand the Robot the cards one by one (this is the input). When the Robot is handed a card, they must decide whether it is okay for today's healthy lunch, and take it to the new lunch bag, or not okay for today's lunch, in which case it goes into the box for later.

1. **Designer:** Place the practice Robot on the 'start' bag and put the other lunch bag and treats box nearby. Hand all the food item cards face down to the person controlling the input. Plan the route (algorithm) the Robot takes to both the lunch bag and treats box.
2. **Writer:** Record the algorithm on the whiteboard. You will need to use an 'IF' step at the beginning (for selection), then use forward, left and right arrows to get to the bag or box, and include a repetition or loop step at the end. What might these look like?
3. **Robot:** Turn over the card when you are handed it and use the 'IF' step on the whiteboard to decide whether to take it to the lunch bag or box. Follow the algorithm to test it. Debug if needed.

Example grid layout:



Hint: What position does the Robot need to be in to start?

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