

Remote coding with Ozobot (2)

Array coding

The array coding associated with Ozobot is an attempt to transfer the known and often used by teachers method of coding various routes, drawings, etc. A table is given, described horizontally with letter coordinates, and vertically with numerical coordinates. The task is to, for example:

- paint the specified array fields with a specific color
- put on the board specific traffic symbols (right, left, straight, turn) to encode a road from a given field (e.g. A1) to another (e.g. D6)

This exercise scheme can be combined with Ozobot, based on a maze route. However, you should remember that the basic table will not be too big. Each time we have to foresee places for colored codes, maintain appropriate distances while not trivializing the task. Therefore, if we decide on this form of exercise - let's use an A3 board divided into 4 x 6 fields with a maze superimposed.

	A	B	C	D
1				
2				
3				
4				
5				
6				

	A	B	C	D
1				
2				
3				
4				
5				
6				

The maze is prepared in an outline version.

The student, by solving a given task, must paint the given route precisely with black. In addition, there are empty boxes on the contour route intended for codes for Ozobot. Depending on the type of the task - the student ignores it (paints in black), or leaves it blank for later filling with the colors appropriate for the given codes.

Routes are already properly formatted and maintain correct distances between robot codes and intersections.

On this board we can carry out further types of tasks:

1. the teacher indicates the beginning and end of the route (in coded form), the student finds the path in the maze between the indicated fields and codes it with colored codes, he also writes the main route code, using the correct coordinates
 2. the teacher selects fields from the table and gives their coordinates (he can enter them in different ways: column, row, in turn, without a diagram), the student's task is to find the coded fields, determine the path that leads through these fields and encode it with codes for job
- You can modify these two types of tasks by setting inter-group work (for example).

Example No. 1

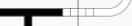
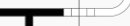
A board with a contour maze is given. The task is to find the way from field B1 to field B6, paint black fragments in the appropriate fields, at the same time setting codes for Ozobot, perform a test, prepare a "program" and a list of field codes which Ozobot drove through.

Solution:

1					2				
	A	B	C	D		A	B	C	D
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				

Next stages:

3. The route is to be determined, we paint the route with black, leaving all the Ozobot codes empty.
4. We set the right places for Ozobot codes, the others are painted black; at the same time, we also paint the fourth, redundant field in Ozobot's codes in black.
5. Paint, use the colors red, blue, green and black correctly codes for Ozobot,

3					4					5				
	A	B	C	D		A	B	C	D		A	B	C	D
1					1					1				
2					2					2				
3					3					3				
4					4					4				
5					5					5				
6					6					6				

START														
1														
2														
3														
4														
5														
END														

Field codes:

B1	B2	C2	C3	D3	D4	C3	B3	A3	A5	B5	B6
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Example No. 2

A board with a contour maze is given. The task is to find the path, given in the form of a list of field codes, paint the fragments in black in the appropriate fields, at the same time setting codes for Ozobot, perform a test and prepare a "program"

Solution:

The list of halves can be saved in several ways:

a. in turn

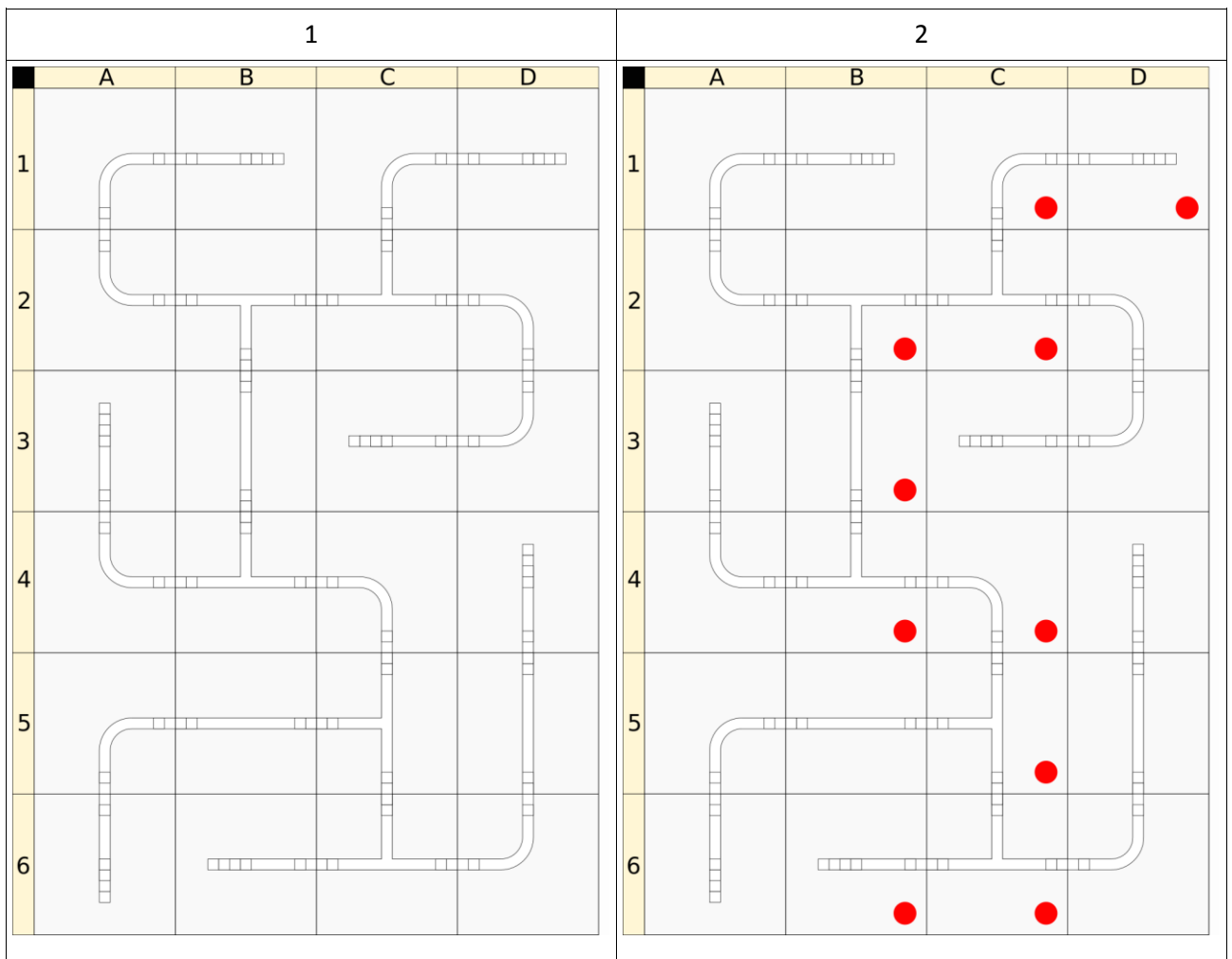
D1	C1	C2	C3	B3	B4	C4	C5	C6	B6
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b. columnar

B2	B3	B4	B6	C1	C2	C4	C5	C6	D1
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c. verse

C1	D1	B2	C2	B3	B4	C4	C5	B6	C6
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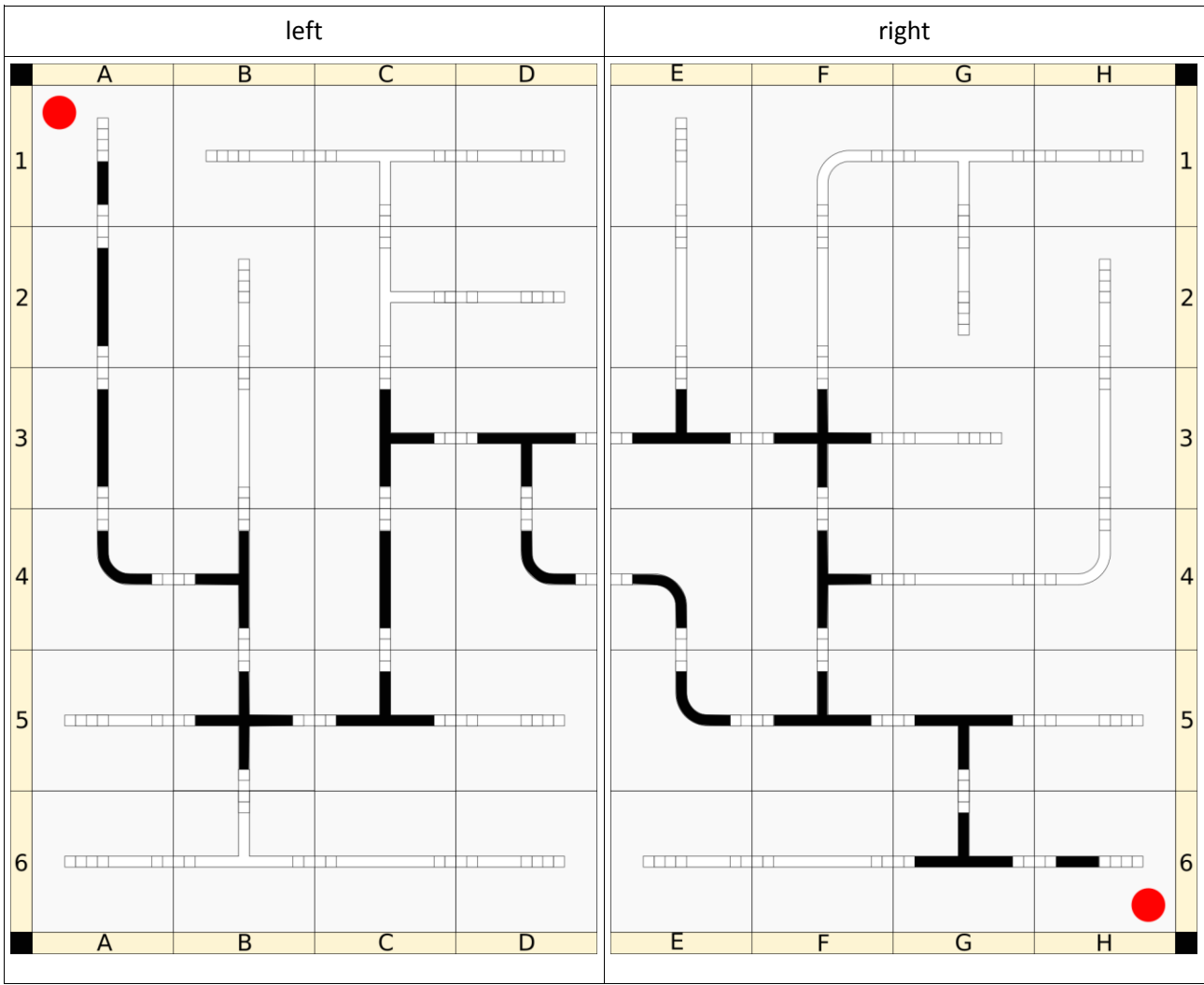


3				4				5			
A B C D				A B C D				A B C D			
1				1				1			
2				2				2			
3				3				3			
4				4				4			
5				5				5			
6				6				6			
START											
1											
2											
3											
4											
5											
6											
END											

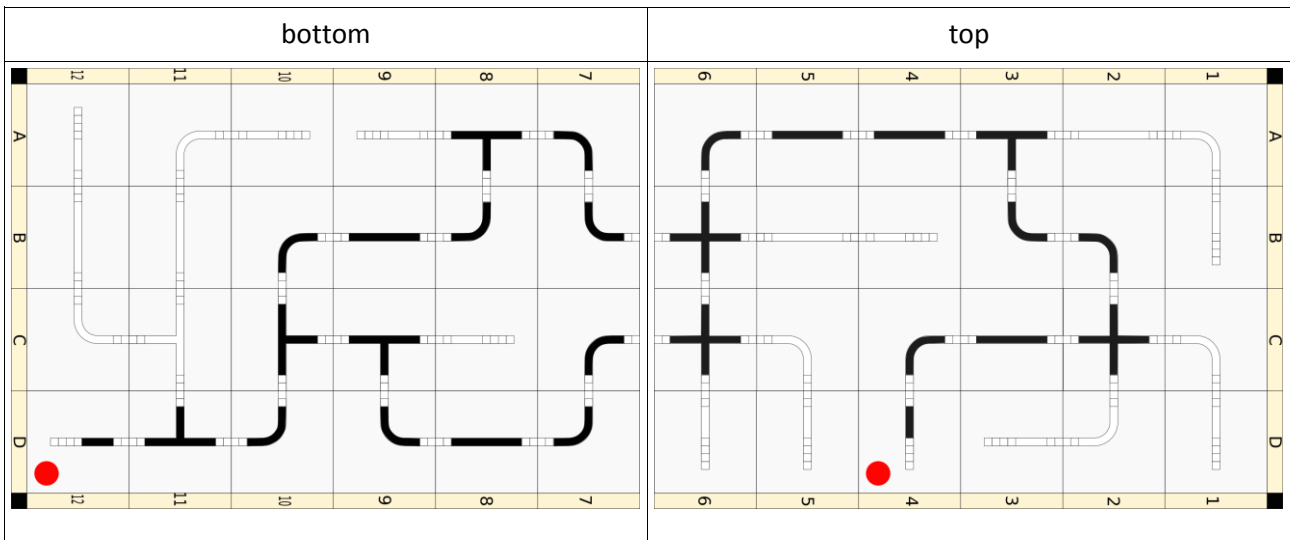
Mock-ups

These types of charts can be used in the implementation of larger projects (e.g. group). We connect the two A3 boards to form the A2 board (horizontally or vertically). In this way, we will prepare classes in which we will apply not only group work, but also inter-group cooperation. For this purpose, you can use boards for array coding and connect manually, or use the resources attached to the book in the form of sample parts of mockups.

An example of submitting a horizontal mock-up:



Example of folding a vertical mockup (rotated)



Array coding may be very useful tool as an introduction to further studying of arrays at all. It can help in understanding not only the arrays but also the coordinates and its coding. With these arrays we can desing even more complicated tasks, with the connection of part 1.

A3 maze index for array coding

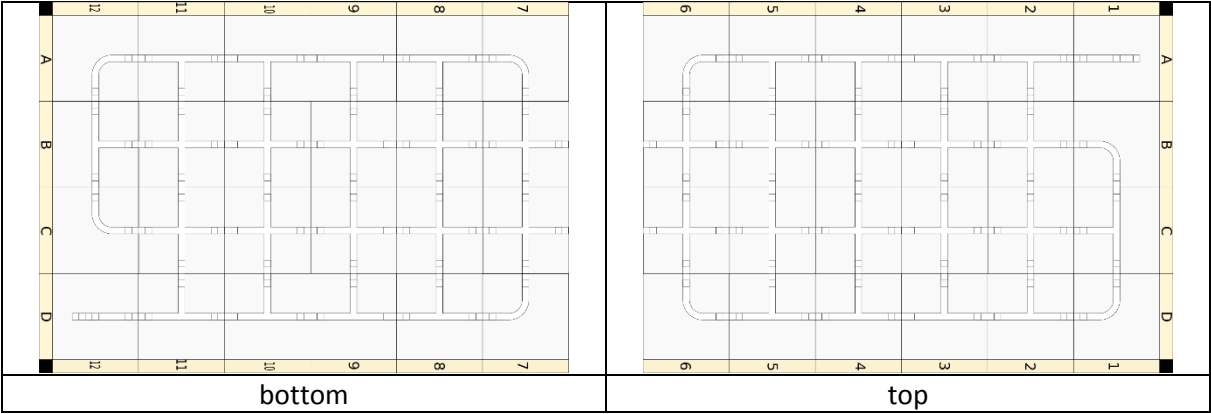
base	1	2
3	4	5
6	7	8
9	10	11

12	13	14
15	16	17
18	11	20

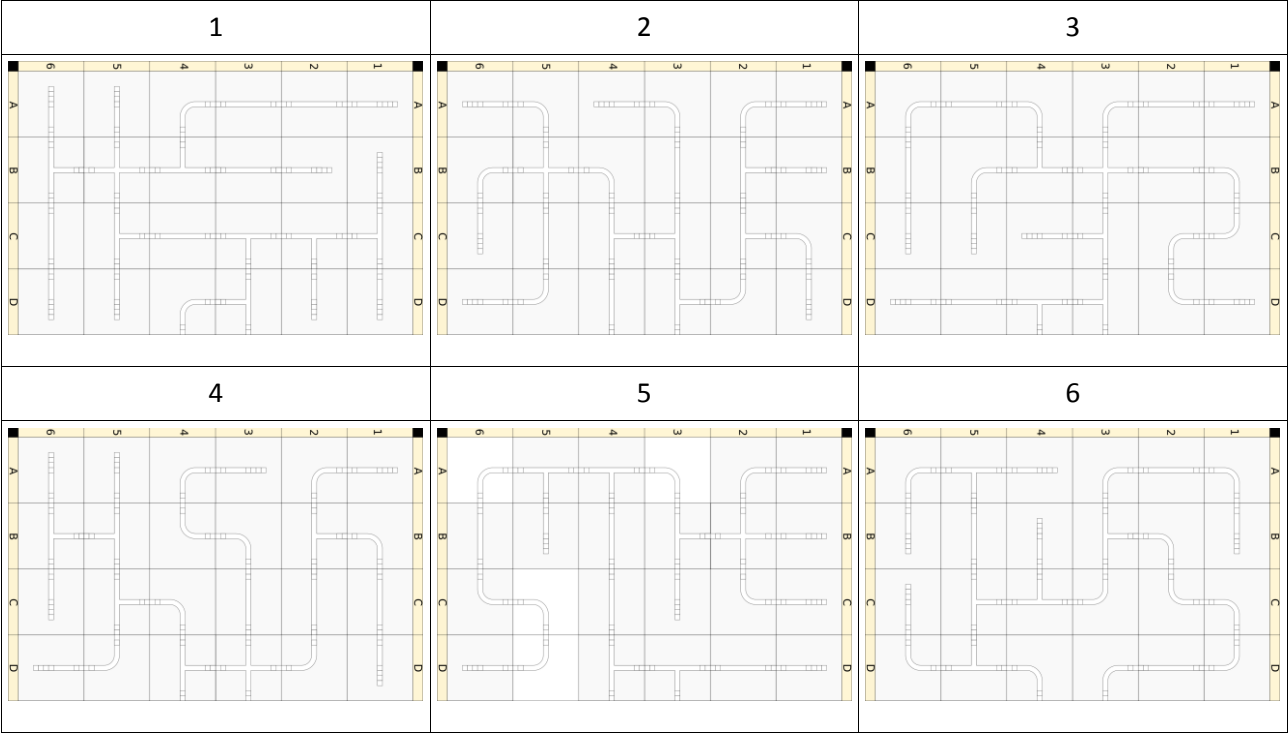
Index of A3 mazes for array coding (mockups)

Bases

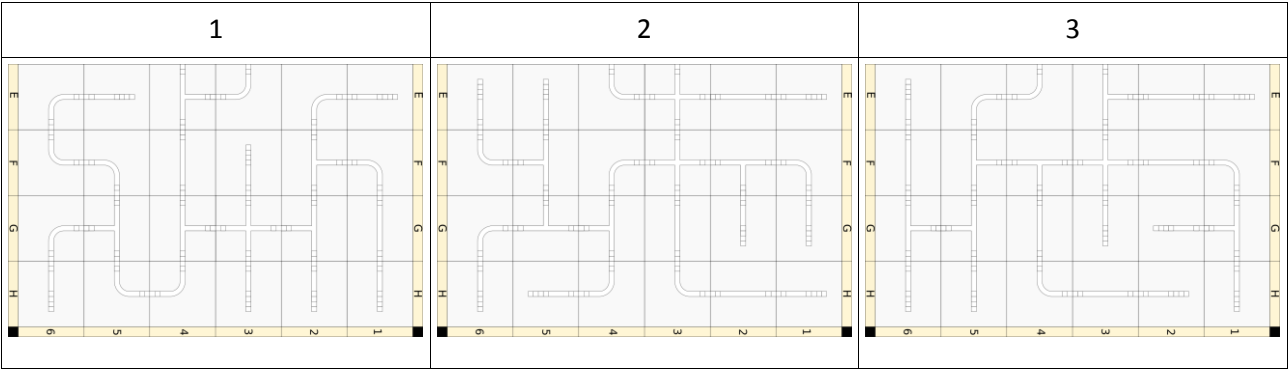
A 6x6 grid maze with a path from 1 to 6. The path starts at 1 (top-left), goes right to 2, then down to 3, then right to 4, then down to 5, and finally right to 6 (bottom-right). The maze is labeled with bases A, B, C, D on the left and right sides.	A 6x6 grid maze with a path from 1 to 6. The path starts at 1 (top-left), goes right to 2, then down to 3, then right to 4, then down to 5, and finally right to 6 (bottom-right). The maze is labeled with bases E, F, G, H on the left and right sides.
left	right

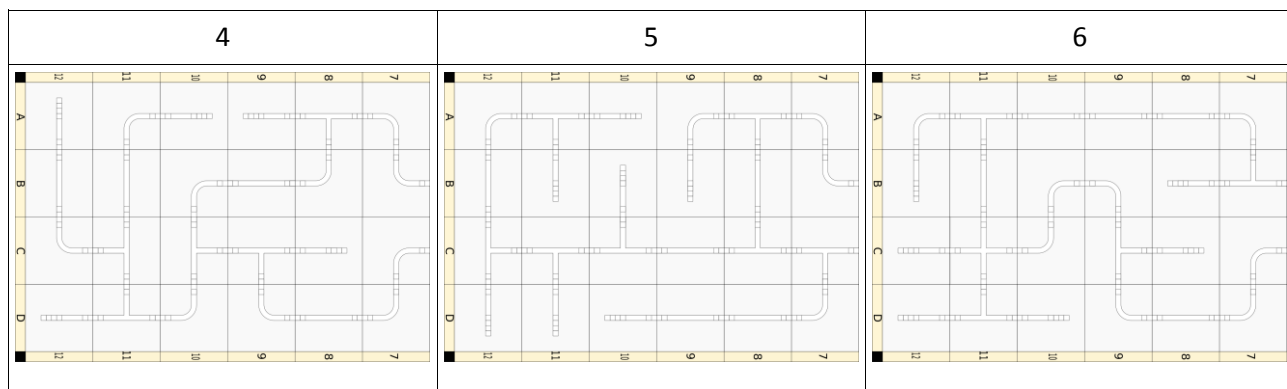


Left



Right





The boards are organized as follows:

Main folder (array coding:

- A3 full – standalone boards
- A3 left right – boards for mockups (left-right)
- A3 top bottom – boards for mockups (top-bottom)

All the files are in PDF format.

If you need PNG format – feel free to contact me: dorota.maria.kowalczyk@gmail.com

Stay safe and healthy!

Thank you 😊