

IA	IA	Step	1	2	3	4	5
Name							
	A		A	M1	M2	B	C
	B		B	C	A	M1	M2
	C		C	A	M1	M2	B
	M1		M1	M2	B	C	A
	M2		M2	B	C	A	M1

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<b>iA</b>	<b>iB</b>	<b>Step</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Name</b>							
	A		M1	B	M2	C	
	B		M2	C	A	M1	
	C		A	M1	B	M2	
	M1		B	M2	C	A	
	M2		C	A	M1	B	

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<b>iA</b>	<b>iC</b>	<b>Step</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Name</b>							
	A		M1	B	C	M2	
	B		C	M2	A	M1	
	C		M2	A	M1	B	
	M1		B	C	M2	A	
	M2		A	M1	B	C	

<b>iB</b>	<b>iB</b>	<b>Step</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Name</b>							
	A		B	M1	M2	C	
	B		M1	M2	C		A
	C		A	B	M1	M2	
	M1		M2	C	A	B	
	M2		C	A	B	M1	

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<b>iB</b>	<b>iC</b>	<b>Step</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Name</b>							
	A		B	M1	C	M2	M2
	B		M1	C	M2	M2	A
	C		M2	A	B	B	M1
	M1		C	M2	A	A	B
	M2		A	B	M1	M1	C

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ic	ic	Step	1	2	3	4	5
Name							
	A		B	C	M1	M2	
	B		C	M1	M2	A	A
	C		M1	M2	A	B	
	M1		M2	A	B	C	
	M2		A	B	C	M1	

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## Comments:

iB iA is the same as iA iB, It's the same turntable with the names of M1 and M2 exchanged. Same for the other patterns not named here.

As a start, we want to avoid combinations of patterns in which both manipulators interact with the same juggler on the same beat:

If M1 does a manipulation on A on beat 1, M2 has to manipulate B or C on this beat. Same goes for the 2 other beats: no matter which juggler M1 interacts with, M2 will chose for one of the two other jugglers.

Obviously you can find for every pattern M1 chooses for 8 different patterns M2 can do without a collision between them: M2 has 2 possibilities on beat 1, two more on beat 2 and another 2 on beat three, hence  $2*2*2=8$  patterns to select from<sup>1</sup>.

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<sup>1</sup> It is possible to do patterns where M1 and M2 manipulate the same juggler on the same beat. But this will need a non standard solution to handle the situation. As an example: we do something alike in the roundabout with 2 manipulators where they both start from the same juggler A, with M2 starting one pass (4 beats) later than M1. Both want to manipulate juggler B on the same hand at the same moment 4 more beats later: M1 wants to hand the carry to juggler B while M2 wants to give the substituted pass to B. (Our name for this is „heads and shoulders“. Stay tuned, it will be on [juggling.tv](http://juggling.tv) some day.)

When you decide for a pattern where both manipulators intercept a club from the same juggler, you have to look at the moments when the intercepts happen: The manipulator who does the earlier intercept will be M1, the one who does the later intercept will be M2. This is easy to see when you take a pattern, follow the actions and roles of the jugglers on their way through the pattern:

	1	2	3	1'
A	<b>pB</b>	pC	<b>pB</b>	B
B	<b>pA</b>	s	<b>pA</b>	C
C	s	pC	s	A
M1	<b>iB</b>	<b>cB</b>	<b>sA</b>	M1
M2	<b>cC</b>	<b>sC</b>	<b>iB</b>	M2

M1: **iB** **cB** **sA** (Unscrambled B)

M2: **cC** **sC** **iB** (Chopped Zig Zag)

**Bold text** marks the moment and person who is replaced by a manipulator