

On the Subject of Reordered Keys

Seeing triple now, are we?

This module consists of 6 coloured keys, each of which is labelled with a coloured number.

These keys turn black when highlighted, and remain black when pressed.

The possible colours for both the keys and the numbers labelling them are: (R)ed, (G)reen, (B)lue, (C)yan, (M)agenta, and (Y)ellow.

Any of the numbers 1 - 6 may appear on each of the keys.

The information given by each key is used to locate two cells, each within a 6x6 grid, which in turn will be used to locate a cell in a third 6x6 grid, which will have a unique value in the range 1 - 6.

One of the six keys is a pivot, which is used to determine the correct configuration of keys to be submitted, and acts as the submit button for the current sequence of keys.

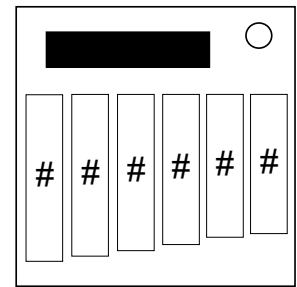
Pressing any two of the other keys will swap them and their values.

The module will reset if-

- the pivot key is pressed.
- any key is pressed after six swaps.

In six swaps or fewer, rearrange the keys until the configuration of key values is correct, avoiding forbidden configurations, and submit it by pressing the pivot key to advance to the next of two stages.

Submitting an incorrect configuration or failing to avoid forbidden configurations will cause a strike to be issued.



Step 1: Finding key values

The value of each key is found in Grid 3, the coordinates of which, are given by entries in the other two grids.

On Grid 1,

- the column on the left refers to the colour of the key.
- the row along the top refers to the label on the key.

On Grid 2,

- the column on the left refers to the colour of the label.
- the row along the top refers to the initial position of the key from left to right.

Grid 1							Grid 2							Grid 3						
	1	2	3	4	5	6		1	2	3	4	5	6		U	V	W	X	Y	Z
R	C	A	F	D	B	E	R	V	Y	U	Z	X	W	A	5	3	6	1	2	4
G	E	D	B	C	F	A	G	Z	X	V	W	U	Y	B	4	1	5	3	6	2
B	F	B	C	A	E	D	B	X	W	Z	U	Y	V	C	1	6	2	4	5	3
C	B	C	D	E	A	F	C	U	Z	Y	V	W	X	D	3	5	1	2	4	6
M	A	F	E	B	D	C	M	Y	V	W	X	Z	U	E	2	4	3	6	1	5
Y	D	E	A	F	C	B	Y	W	U	X	Y	V	Z	F	6	2	4	5	3	1

Step 2: Pivot key

If exactly one of the keys has a label that is the same colour as the key itself, then the pivot is the key whose value is equal to the label of that key.

Otherwise, the pivot is the key whose value is equal to the value in Grid 3 with-

- the row given by the sum of the primary coloured labels modulo 6, starting with A = 0.
- the column given by the sum of the secondary coloured labels modulo 6, starting with U = 0.

Note: the primary colours are red, green, and blue and the secondary colours are cyan, magenta, and yellow.

Step 3: Key Configurations

The correct configuration of key values is a 6-cyclic permutation of the configuration '123456' with the value of the pivot key in the correct position.

A strike will be issued if the configuration of key values after swapping two keys belongs to the list below:

123465	213645	312546	412365	512634	612435
124635	214536	314652	413526	513462	613425
125346	215463	315246	415623	514362	614235
126453	216543	316254	416325	516423	615324
132564	231546	321654	421563	521634	621354
134265	234516	324615	423561	523146	623514
135624	235461	325614	425631	524316	624153
136542	236145	326451	426531	526314	625134
142356	241653	341256	431562	531426	631452
143625	243156	342651	432165	532416	632415
145236	245361	345261	435162	534612	634215
146523	246135	346251	436152	536412	635421
152436	251364	351264	451326	541263	641253
153642	253164	352641	452163	542361	642351
154632	254136	354126	453621	543216	643521
156243	256413	356241	456312	546123	645231
162345	261534	361245	461532	561342	651234
163524	263154	362541	462315	562431	652341
164352	264513	364125	463512	563124	653142
165432	265143	365214	465132	564213	654321