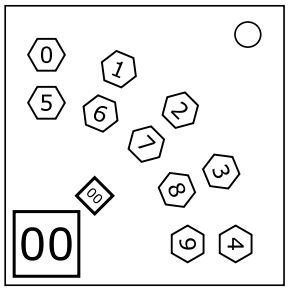
On the Subject of The Twin



I sure hope that you don't get to see two of them on the same bomb.

This module contains 10 numbered buttons lining up in arcs and two screens at the bottom left corner where the smaller screen is located at the top right corner of the bigger screen.

This module has 3 phases: Initial phase, Sequence phase, and Submission phase.

The bigger screen is the stage number screen which will show the **initial number** during the initial phase, **stage number** during the sequence phase, and last 2 correctly submitted digits in the submission phase.

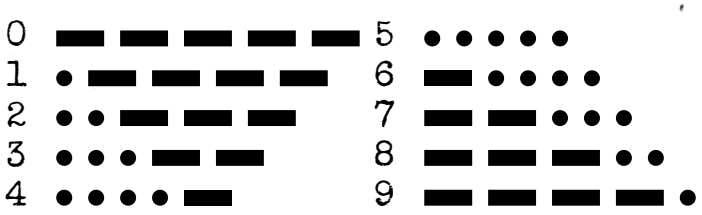
The smaller screen is the module pair ID which will show the pair ID assigned to the module. The text on this screen will be white only when the module does not have a paired **The Twin** module.

This module can only be solved after every other non-ignored module is solved. A strike will be given if upon an early interaction with the module. If the bomb has less than 2 of such module, **The Twin** will automatically disarm itself.

In the initial phase, the module background will display both Morse code and color sequence simultaneously. The off state will be in gray color and the on state will be color from the color sequence. A long pause indicates the beginning of both Morse code and color sequence. Use Morse code chart and color sequence table to get two numbers. These number will be used to find the starting coordinates in the tables below color sequence table.

Note that there are 8 possible colors that can appear on the module. They are Gray, Red (R), Green (G), Blue (B), Yellow (Y), White (W), Purple (P), and Emerald (E).

Morse Code Chart



Color Sequence Table

Color Sequence					Number
R	P	W	Y	B	0
G	E	W	R	P	1
Y	G	E	P	R	2
R	G	B	Y	W	3
Y	G	R	P	W	4
G	R	Y	P	E	5
R	P	G	B	Y	6
E	R	W	G	Y	7
G	E	B	W	R	8
Y	P	W	R	E	9
P	E	R	Y	G	10
W	R	E	B	P	11

The next table is the **remove set** table. To find initial position in this table, use color sequence number as column and Morse code number as row. The cell in the top left corner has coordinate (0,0).

Remove Set Table

371	816	138	594	293	074	675	463	319	572	503	413
218	627	236	941	517	037	437	804	620	014	980	135
438	652	694	482	569	096	985	608	521	637	179	539
570	601	524	853	019	349	897	803	875	028	574	514
706	298	043	320	783	603	180	079	592	290	124	871
258	354	487	962	456	723	518	148	782	894	417	129
021	123	638	105	146	342	573	402	615	701	940	973
642	013	523	846	059	942	961	938	271	548	382	591
093	085	896	796	746	653	396	316	198	780	268	406
794	568	927	650	716	054	502	270	427	216	795	867

The next table is the **color table.** To find initial position in this table, use color sequence and Morse code numbers as column and row respectively. Subtract 6 and 5 respectively from those numbers if either of them is out of range. The cell at the top left corner has coordinate of (0,0).

G	G	P	P	W	E
B	B	R	R	W	E
R	W	Y	E	P	P
R	W	Y	E	B	B
Y	E	B	G	G	Y

When the module enters the sequence phase, the background will cycle up to 4 colors where exactly one of them is gray. This represents a total of 3 **steps.** The gray color indicates the beginning of the first step in each stage. Each step is an instruction to generate the **Final Sequence** string. Follow the following instructions for each step to figure out the final sequence string:

1. Add 1 to the previous number. If this is the first step of the first stage, the previous number is the **initial number.**
2. Remove any digit of this new number that are in the current remove set. If this is the first step of the first stage, then such remove set is the remove set at the starting position of the remove set table.
3. Add that number after removing such digits to the end of the **Final Sequence** string. This string is initially empty.
4. Find the direction of the adjacent cell to the current position in the color table that has the same color as the current step color.
5. Move 1 cell towards that direction in both remove set and color tables. Both tables wrap around from top to bottom, left to right.
6. If the number on the stage number screen is red, then the current remove set is changed to the remove set in the current position in remove set table.

If the **Final Sequence** string is still empty, then this string becomes a single character 0.

When the module enters the submission phase, the stage display will initially turn blank and will show up to the last two correctly submitted digits. If an incorrect digit was entered, a strike will be given but the submission will not reset. Enter all correct digits to solve the module.

WARNING: This module will **NOT** show any step upon strikes.

IMPORTANT: When **The Twin** has a pair (indicated by the module pair ID screen to be any other color than white), one module of the pair is flipped from left to right. Some information are also either manipulated or swapped. Use the list below to figure out which information were swapped or manipulated.

If the module pair ID display is...

- ...Red, then the final sequence strings were manipulated. Follow these instructions to figure out the new final sequence strings.
  - Take the first n digits and ignore the reset of the strings where n is the length of the shorter string.
  - The final sequence string of the module that is not flipped is the string of the smaller digits in the same position of the two strings.
  - The final sequence string of the module that is flipped is the string of the larger digits in the same position of the two strings.
- ...Green, then the initial numbers were traded. Swap the initial numbers then generate the final sequence strings as normal.
- ...Blue, then the background colors in the sequence phase were traded. The background color of one of **The Twin** indicates the movement in the tables of the other and vice versa.
- ...Yellow, then the remove sets were traded including which step the remove set is changed. Trade them and generate the final sequence string as normal.

The functionality of the numbered buttons are also swapped between the pair. The numbered buttons of one module will enter digit into the other module. Make sure to take these into the account when submitting the final sequence strings. Submit the true final sequence strings to fake 'solve' the modules.

When a module is fake solved, only one of the status lights in the pair will turn green. The bomb does not recognize that one of **The Twin** in the pair was solved. Submitting the second final sequence strings into the other module in the pair to turn the status light green will truly solve both modules.