

BOMB DEFUSAL MANUAL

Version 1

Verification Code: 241

Welcome to the dangerous and challenging world of bomb defusing.

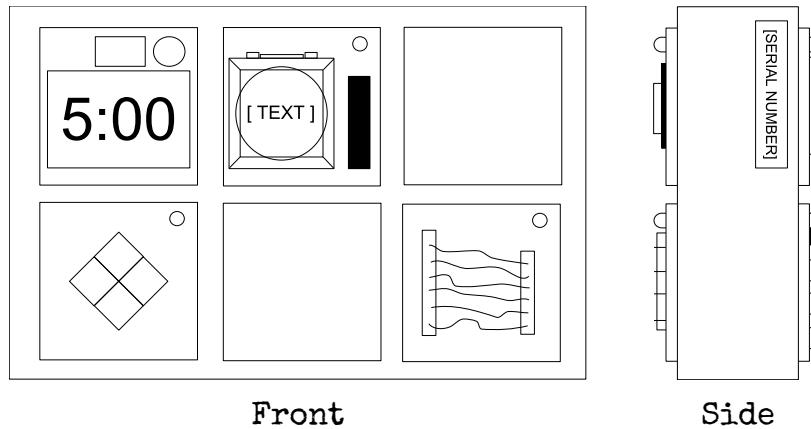
Study this manual carefully; you are the expert. In these pages you will find everything you need to know to defuse even the most insidious of bombs.

And remember — One small oversight and it could all be over!

Defusing Bombs

A bomb will explode when its countdown timer reaches 0:00 or when too many strikes have been recorded. The only way to defuse a bomb is to disarm all of its modules before its countdown timer expires.

Example Bomb



Modules

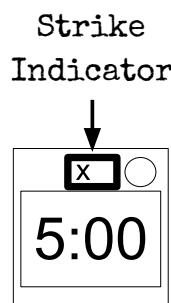
Each bomb will include up to 11 modules that must be disarmed. Each module is discrete and can be disarmed in any order.

Instructions for disarming modules can be found in Section 1. "Needy" modules present a special case and are described in Section 2.

Strikes

When the Defuser makes a mistake the bomb will record a strike which will be displayed on the indicator above the countdown timer. Bombs with a strike indicator will explode upon the third strike. The timer will begin to count down faster after a strike has been recorded.

If no strike indicator is present above the countdown timer, the bomb will explode upon the first strike, leaving no room for error.



Gathering Information

Some disarming instructions will require specific information about the bomb, such as the serial number. This type of information can typically be found on the top, bottom, or sides of the bomb casing. See Appendix A, B, and C for identification instructions that will be useful in disarming certain modules.

Section 1: Modules

Modules can be identified by an LED in the top right corner.

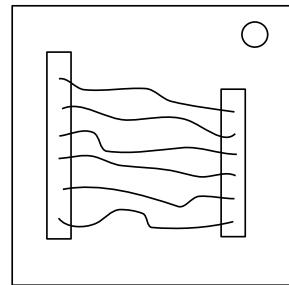
When this LED is lit green the module has been disarmed.

All modules must be disarmed to defuse the bomb.



On the Subject of Wires

*Wires are the lifeblood of electronics! Wait, no, electricity is the lifeblood.
Wires are more like the arteries. The veins? No matter...*



- A wire module can have 3–6 wires on it.
- Only the one correct wire needs to be cut to disarm the module.
- Wire ordering begins with the first on the top.

3 wires:

If there are no red wires, cut the second wire.

Otherwise, if the last wire is white, cut the last wire.

Otherwise, if there is more than one blue wire, cut the last blue wire.

Otherwise, cut the last wire.

4 wires:

If there is more than one red wire and the last digit of the serial number is odd, cut the last red wire.

Otherwise, if the last wire is yellow and there are no red wires, cut the first wire.

Otherwise, if there is exactly one blue wire, cut the first wire.

Otherwise, if there is more than one yellow wire, cut the last wire.

Otherwise, cut the second wire.

5 wires:

If the last wire is black and the last digit of the serial number is odd, cut the fourth wire.

Otherwise, if there is exactly one red wire and there is more than one yellow wire, cut the first wire.

Otherwise, if there are no black wires, cut the second wire.

Otherwise, cut the first wire.

6 wires:

If there are no yellow wires and the last digit of the serial number is odd, cut the third wire.

Otherwise, if there is exactly one yellow wire and there is more than one white wire, cut the fourth wire.

Otherwise, if there are no red wires, cut the last wire.

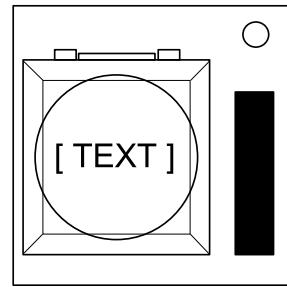
Otherwise, cut the fourth wire.

On the Subject of The Button

You might think that a button telling you to press it is pretty straightforward. That's the kind of thinking that gets people exploded.

See Appendix A for indicator identification reference.

See Appendix B for battery identification reference.



Follow these rules in the order they are listed. Perform the first action that applies:

1. If the button is blue and the button says "Abort", hold the button and refer to "Releasing a Held Button".
2. If there is more than 1 battery on the bomb and the button says "Detonate", press and immediately release the button.
3. If the button is white and there is a lit indicator with label CAR, hold the button and refer to "Releasing a Held Button".
4. If there are more than 2 batteries on the bomb and there is a lit indicator with label FRK, press and immediately release the button.
5. If the button is yellow, hold the button and refer to "Releasing a Held Button".
6. If the button is red and the button says "Hold", press and immediately release the button.
7. If none of the above apply, hold the button and refer to "Releasing a Held Button".

Releasing a Held Button

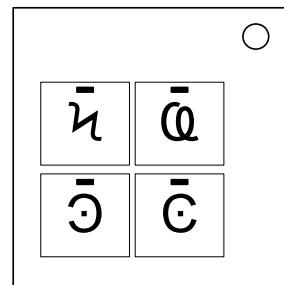
If you start holding the button down, a colored strip will light up on the right side of the module. Based on its color you must release the button at a specific point in time:

- Blue strip: release when the countdown timer has a 4 in any position.
- White strip: release when the countdown timer has a 1 in any position.
- Yellow strip: release when the countdown timer has a 5 in any position.
- Any other color strip: release when the countdown timer has a 1 in any position.

On the Subject of Keypads

I'm not sure what these symbols are, but I suspect they have something to do with occult.

- Only one column below has all four of the symbols from the keypad.
- Press the four buttons in the order their symbols appear from top to bottom within that column.



Q
A
λ
ñ
ꝝ
ȝ
Ć

Ё
Ӯ
҆
Ѡ
☆
ȝ
đ

©
ڏ
Ѡ
Ж
☆

б
¶
Ӯ
ꝝ
ж
ڏ
ڙ

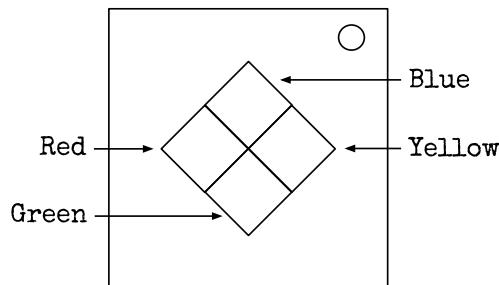
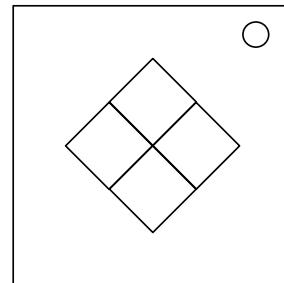
Ѱ
ڦ
Ӯ
Ҫ
¶
ڙ
★

б
Ё
Ӯ
ӕ
Ѱ
ڙ
Ω

On the Subject of Simon Says

This is like one of those toys you played with as a kid where you have to match the pattern that appears, except this one is a knockoff that was probably purchased at a dollar store.

1. One of the four colored buttons will flash.
2. Using the correct table below, press the button with the corresponding color.
3. The original button will flash, followed by another. Repeat this sequence in order using the color mapping.
4. The sequence will lengthen by one each time you correctly enter a sequence until the module is disarmed.



If the serial number contains a vowel:

		Red Flash	Blue Flash	Green Flash	Yellow Flash
Button to press:	No Strikes	Blue	Red	Yellow	Green
	1 Strike	Yellow	Green	Blue	Red
	2 Strikes	Green	Red	Yellow	Blue

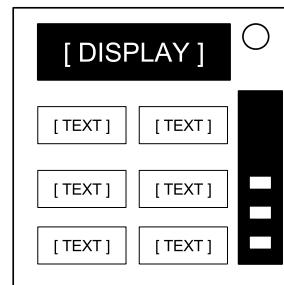
If the serial number does not contain a vowel:

		Red Flash	Blue Flash	Green Flash	Yellow Flash
Button to press:	No Strikes	Blue	Yellow	Green	Red
	1 Strike	Red	Blue	Yellow	Green
	2 Strikes	Yellow	Green	Blue	Red

On the Subject of Who's on First

This contraption is like something out of a sketch comedy routine, which might be funny if it wasn't connected to a bomb. I'll keep this brief, as words only complicate matters.

1. Read the display and use step 1 to determine which button label to read.
2. Using this button label, use step 2 determine which button to push.
3. Repeat until the module has been disarmed.



Step 1:

Based on the display, read the label of a particular button and proceed to step 2:

YES	FIRST	DISPLAY	OKAY	SAYS	NOTHING
BLANK	NO	LED	LEAD	READ	
RED	REED	LEED	HOLD ON	YOU	YOU ARE
YOUR	YOU'RE	UR	THERE	THEY'RE	THEIR
THEY ARE	SEE	C	CEE		

Step 2:

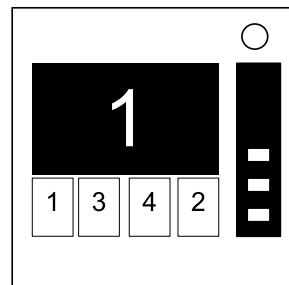
Using the label from step 1, push the first button that appears in its corresponding list:

"READY":	YES, OKAY, WHAT, MIDDLE, LEFT, PRESS, RIGHT, BLANK, READY, NO, FIRST, UHHH, NOTHING, WAIT
"FIRST":	LEFT, OKAY, YES, MIDDLE, NO, RIGHT, NOTHING, UHHH, WAIT, READY, BLANK, WHAT, PRESS, FIRST
"NO":	BLANK, UHHH, WAIT, FIRST, WHAT, READY, RIGHT, YES, NOTHING, LEFT, PRESS, OKAY, NO, MIDDLE
"BLANK":	WAIT, RIGHT, OKAY, MIDDLE, BLANK, PRESS, READY, NOTHING, NO, WHAT, LEFT, UHHH, YES, FIRST
"NOTHING":	UHHH, RIGHT, OKAY, MIDDLE, YES, BLANK, NO, PRESS, LEFT, WHAT, WAIT, FIRST, NOTHING, READY
"YES":	OKAY, RIGHT, UHHH, MIDDLE, FIRST, WHAT, PRESS, READY, NOTHING, YES, LEFT, BLANK, NO, WAIT
"WHAT":	UHHH, WHAT, LEFT, NOTHING, READY, BLANK, MIDDLE, NO, OKAY, FIRST, WAIT, YES, PRESS, RIGHT
"UHHH":	READY, NOTHING, LEFT, WHAT, OKAY, YES, RIGHT, NO, PRESS, BLANK, UHHH, MIDDLE, WAIT, FIRST
"LEFT":	RIGHT, LEFT, FIRST, NO, MIDDLE, YES, BLANK, WHAT, UHHH, WAIT, PRESS, READY, OKAY, NOTHING
"RIGHT":	YES, NOTHING, READY, PRESS, NO, WAIT, WHAT, RIGHT, MIDDLE, LEFT, UHHH, BLANK, OKAY, FIRST
"MIDDLE":	BLANK, READY, OKAY, WHAT, NOTHING, PRESS, NO, WAIT, LEFT, MIDDLE, RIGHT, FIRST, UHHH, YES
"OKAY":	MIDDLE, NO, FIRST, YES, UHHH, NOTHING, WAIT, OKAY, LEFT, READY, BLANK, PRESS, WHAT, RIGHT
"WAIT":	UHHH, NO, BLANK, OKAY, YES, LEFT, FIRST, PRESS, WHAT, WAIT, NOTHING, READY, RIGHT, MIDDLE
"PRESS":	RIGHT, MIDDLE, YES, READY, PRESS, OKAY, NOTHING, UHHH, BLANK, LEFT, FIRST, WHAT, NO, WAIT
"YOU":	SURE, YOU ARE, YOUR, YOU'RE, NEXT, UH HUH, UR, HOLD, WHAT?, YOU, UH UH, LIKE, DONE, U
"YOU ARE":	YOUR, NEXT, LIKE, UH HUH, WHAT?, DONE, UH UH, HOLD, YOU, U, YOU'RE, SURE, UR, YOU ARE
"YOUR":	UH UH, YOU ARE, UH HUH, YOUR, NEXT, UR, SURE, U, YOU'RE, YOU, WHAT?, HOLD, LIKE, DONE
"YOU'RE":	YOU, YOU'RE, UR, NEXT, UH UH, YOU ARE, U, YOUR, WHAT?, UH HUH, SURE, DONE, LIKE, HOLD
"UR":	DONE, U, UR, UH HUH, WHAT?, SURE, YOUR, HOLD, YOU'RE, LIKE, NEXT, UH UH, YOU ARE, YOU
"U":	UH HUH, SURE, NEXT, WHAT?, YOU'RE, UR, UH UH, DONE, U, YOU, LIKE, HOLD, YOU ARE, YOUR
"UH HUH":	UH HUH, YOUR, YOU ARE, YOU, DONE, HOLD, UH UH, NEXT, SURE, LIKE, YOU'RE, UR, U, WHAT?
"UH UH":	UR, U, YOU ARE, YOU'RE, NEXT, UH UH, DONE, YOU, UH HUH, LIKE, YOUR, SURE, HOLD, WHAT?
"WHAT?":	YOU, HOLD, YOU'RE, YOUR, U, DONE, UH UH, LIKE, YOU ARE, UH HUH, UR, NEXT, WHAT?, SURE
"DONE":	SURE, UH HUH, NEXT, WHAT?, YOUR, UR, YOU'RE, HOLD, LIKE, YOU, U, YOU ARE, UH UH, DONE
"NEXT":	WHAT?, UH HUH, UH UH, YOUR, HOLD, SURE, NEXT, LIKE, DONE, YOU ARE, UR, YOU'RE, U, YOU
"HOLD":	YOU ARE, U, DONE, UH UH, YOU, UR, SURE, WHAT?, YOU'RE, NEXT, HOLD, UH HUH, YOUR, LIKE
"SURE":	YOU ARE, DONE, LIKE, YOU'RE, YOU, HOLD, UH HUH, UR, SURE, U, WHAT?, NEXT, YOUR, UH UH
"LIKE":	YOU'RE, NEXT, U, UR, HOLD, DONE, UH UH, WHAT?, UH HUH, YOU, LIKE, SURE, YOU ARE, YOUR

On the Subject of Memory

Memory is a fragile thing but so is everything else when a bomb goes off, so pay attention!

- Press the correct button to progress the module to the next stage. Complete all stages to disarm the module.
- Pressing an incorrect button will reset the module back to stage 1.
- Button positions are ordered from left to right.



Stage 1:

If the display is 1, press the button in the second position.

If the display is 2, press the button in the second position.

If the display is 3, press the button in the third position.

If the display is 4, press the button in the fourth position.

Stage 2:

If the display is 1, press the button labeled "4".

If the display is 2, press the button in the same position as you pressed in stage 1.

If the display is 3, press the button in the first position.

If the display is 4, press the button in the same position as you pressed in stage 1.

Stage 3:

If the display is 1, press the button with the same label you pressed in stage 2.

If the display is 2, press the button with the same label you pressed in stage 1.

If the display is 3, press the button in the third position.

If the display is 4, press the button labeled "4".

Stage 4:

If the display is 1, press the button in the same position as you pressed in stage 1.

If the display is 2, press the button in the first position.

If the display is 3, press the button in the same position as you pressed in stage 2.

If the display is 4, press the button in the same position as you pressed in stage 2.

Stage 5:

If the display is 1, press the button with the same label you pressed in stage 1.

If the display is 2, press the button with the same label you pressed in stage 2.

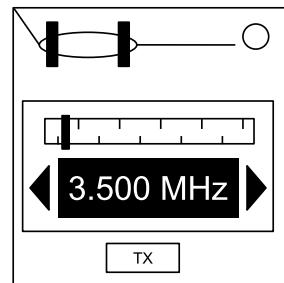
If the display is 3, press the button with the same label you pressed in stage 4.

If the display is 4, press the button with the same label you pressed in stage 3.

On the Subject of Morse Code

An antiquated form of naval communication? What next? At least it's genuine Morse Code, so pay attention and you might just learn something.

- Interpret the signal from the flashing light using the Morse Code chart to spell one of the words in the table.
- The signal will loop, with a long gap between repetitions.
- Once the word is identified, set the corresponding frequency and press the transmit (TX) button.



How to Interpret

- A short flash represents a dot.
- A long flash represents a dash.
- There is a long gap between letters.
- There is a very long gap before the word repeats.

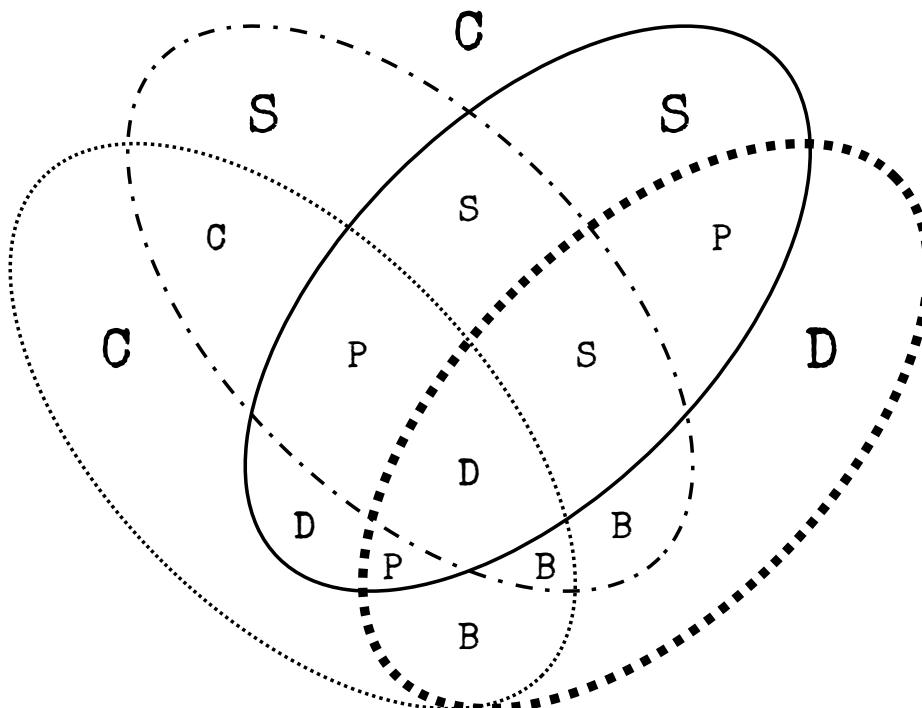
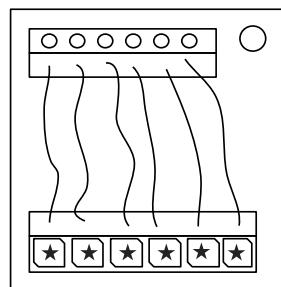
A	● -	U	● • -
B	- - . .	V	● • • -
C	- - . - .	W	● - -
D	- - . .	X	- - . -
E	●	Y	- - . - -
F	● . - - .	Z	- - - . .
G	- - - .		
H	● ● . .		
I	● ●		
J	● - - -		
K	- - . -	1	● - - - -
L	. - - . .	2	● . - - -
M	- - -	3	● • - -
N	- - .	4	● • • -
O	- - -	5	● • • . .
P	● - - - .	6	- -
Q	- - - . -	7	- - - . . .
R	. - - . .	8	- - - - . .
S	● ● .	9	- - - - - .
T	- -	0	- - - - -

If the word is:	Respond at frequency:
shell	3.505 MHz
halls	3.515 MHz
slick	3.522 MHz
trick	3.532 MHz
boxes	3.535 MHz
leaks	3.542 MHz
strobe	3.545 MHz
bistro	3.552 MHz
flick	3.555 MHz
bombs	3.565 MHz
break	3.572 MHz
brick	3.575 MHz
steak	3.582 MHz
sting	3.592 MHz
vector	3.595 MHz
beats	3.600 MHz

On the Subject of Complicated Wires

These wires aren't like the others. Some have stripes! That makes them completely different. The good news is that we've found a concise set of instructions on what to do about it! Maybe too concise...

- Look at each wire: there is an LED above the wire and a space for a "★" symbol below the wire.
- For each wire/LED/symbol combination, use the Venn diagram below to decide whether or not to cut the wire.
- Each wire may be striped with multiple colors.



	Wire has red coloring
	Wire has blue coloring
	Has ★ symbol
	LED is on

Letter	Instruction
C	Cut the wire
D	Do not cut the wire
S	Cut the wire if the last digit of the serial number is even
P	Cut the wire if the bomb has a parallel port
B	Cut the wire if the bomb has two or more batteries

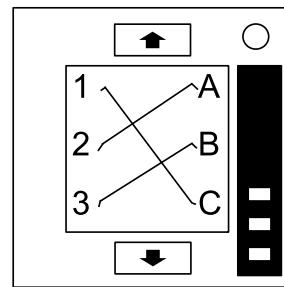
See Appendix B for battery identification reference.

See Appendix C for port identification reference.

On the Subject of Wire Sequences

It's hard to say how this mechanism works. The engineering is pretty impressive, but there must have been an easier way to manage nine wires.

- Within this module there are several panels with wires on them, but only one panel is visible at a time. Switch to the next panel by using the down button and the previous panel by using the up button.
- Do not switch to the next panel until you are sure that you have cut all necessary wires on the current panel.
- Cut the wires as directed by the following table. Wire occurrences are cumulative over all panels within the module.

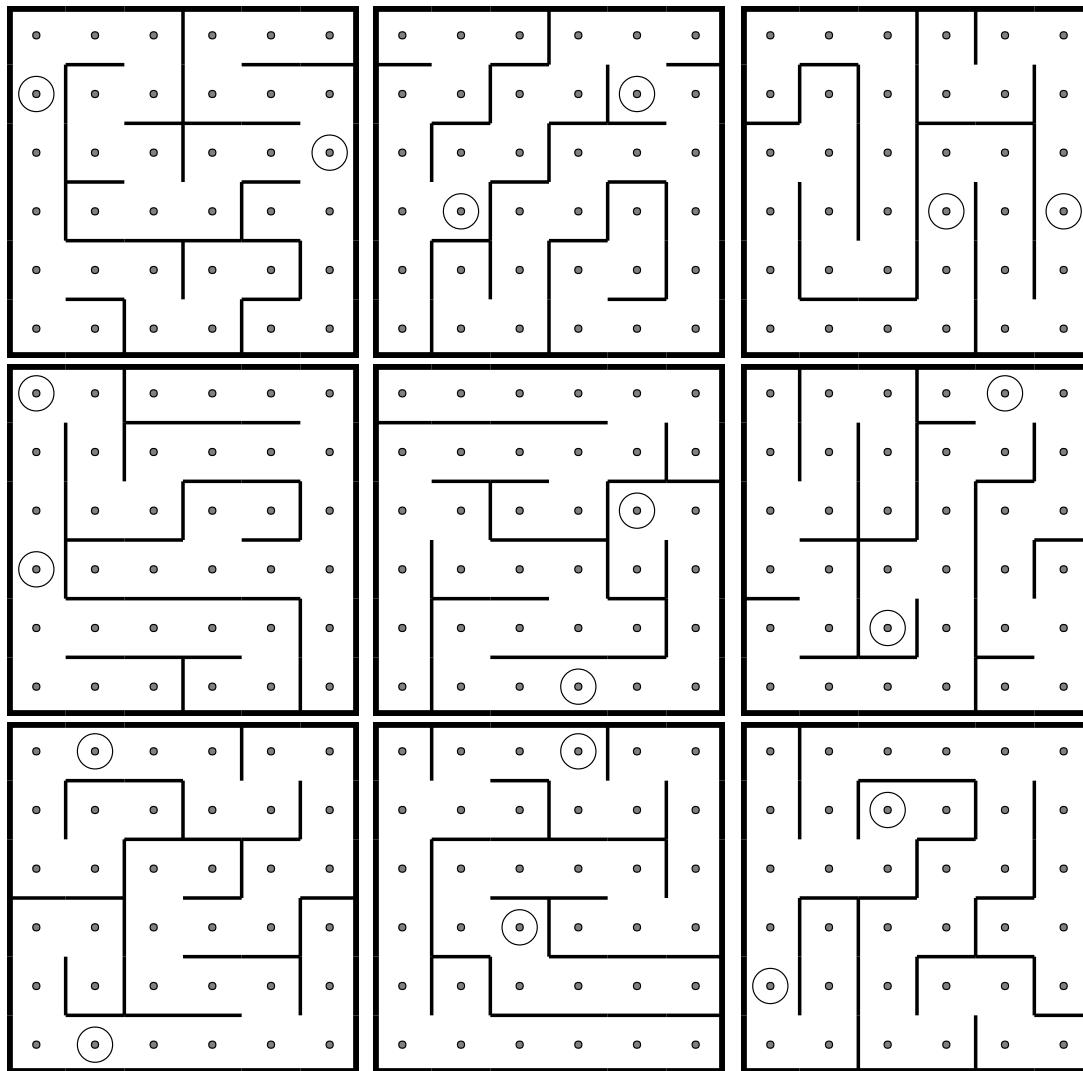
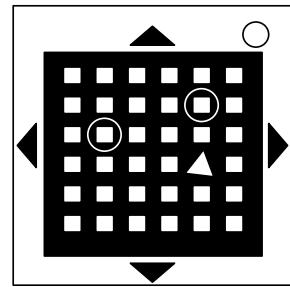


Red Wire Occurrences		Blue Wire Occurrences		Black Wire Occurrences	
Wire Occurrence	Cut if connected to:	Wire Occurrence	Cut if connected to:	Wire Occurrence	Cut if connected to:
First red occurrence	C	First blue occurrence	B	First black occurrence	A, B or C
Second red occurrence	B	Second blue occurrence	A or C	Second black occurrence	A or C
Third red occurrence	A	Third blue occurrence	B	Third black occurrence	B
Fourth red occurrence	A or C	Fourth blue occurrence	A	Fourth black occurrence	A or C
Fifth red occurrence	B	Fifth blue occurrence	B	Fifth black occurrence	B
Sixth red occurrence	A or C	Sixth blue occurrence	B or C	Sixth black occurrence	B or C
Seventh red occurrence	A, B or C	Seventh blue occurrence	C	Seventh black occurrence	A or B
Eighth red occurrence	A or B	Eighth blue occurrence	A or C	Eighth black occurrence	C
Ninth red occurrence	B	Ninth blue occurrence	A	Ninth black occurrence	C

On the Subject of Mazes

This seems to be some kind of maze, probably stolen off of a restaurant placemat.

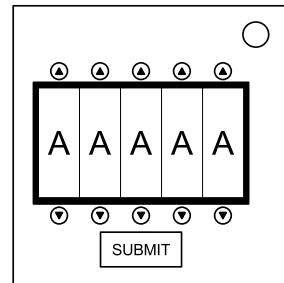
- Find the maze with matching circular markings.
- The defuser must navigate the white light to the red triangle using the arrow buttons.
- **Warning:** Do not cross the lines shown in the maze. These lines are invisible on the bomb.



On the Subject of Passwords

Fortunately this password doesn't seem to meet standard government security requirements: 22 characters, mixed case, numbers in random order without any palindromes above length 3.

- The buttons above and below each letter will cycle through the possibilities for that position.
- Only one combination of the available letters will match a password below.
- Press the submit button once the correct word has been set.

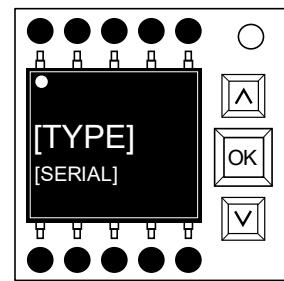


about	after	again	below	could
every	first	found	great	house
large	learn	never	other	place
plant	point	right	small	sound
spell	still	study	their	there
these	thing	think	three	water
where	which	world	would	write

On the Subject of Microcontrollers

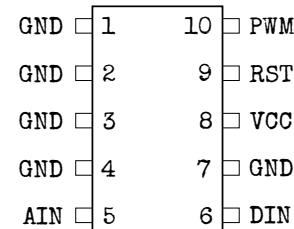
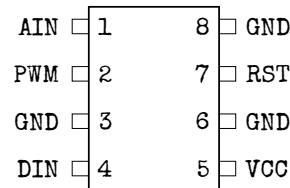
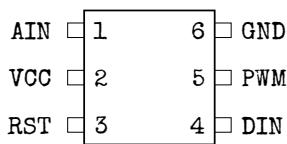
It's called "micro"-controller yet this thing in there is pretty big. Probably because it can cause a pretty big explosion...

1. Use the controller's imprinted type and its size to determine its pin configuration with the diagrams below.
2. The white mark on the controller indicates where the pin with the number 1 is located. The other pins are in ascending order on the side with the number 1 and then continued backwards on the other side.
3. Using the table below determine the correct color code for each connected element.
4. For each pin choose the correct element by pressing the UP and DOWN buttons and confirming your input with the OK button (the next pin will be selected automatically).

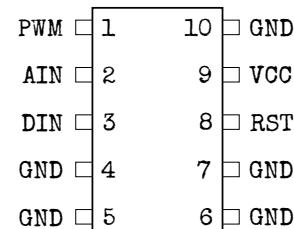
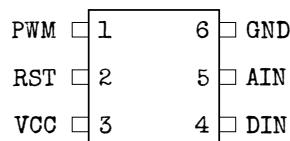
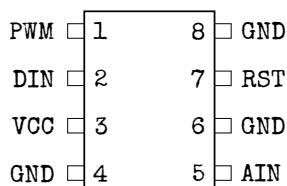


Pin Configurations

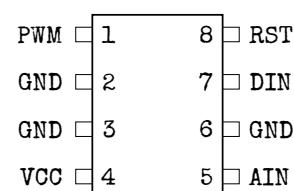
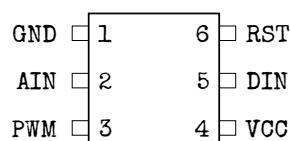
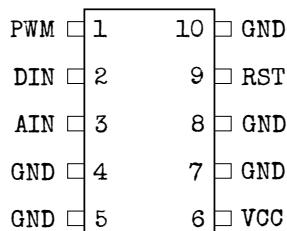
Strike (STRK) Controller:



Diode (LEDS) Controller:

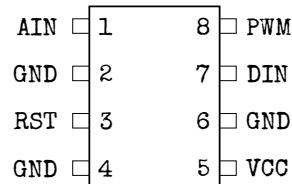
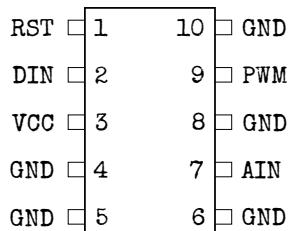
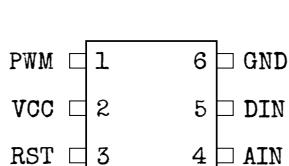


Countdown (CNTD) Controller:



continued on next page ...

Explosion (EXPL) Controller:



Component Color Codes

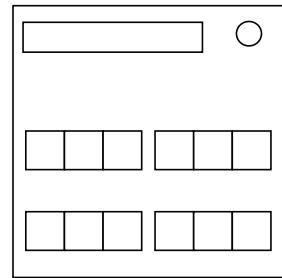
	Input Voltage (VCC)	Analog Input (AIN)	Digital Input (DIN)	Pulse Width Modulation (PWM)	Reset (RST)
If the last digit of the controller's serial number is 1 or 4	Yellow	Magenta	Green	Blue	Red
Otherwise, if there is a lit indicator "SIG" or a RJ-45 port	Yellow	Red	Magenta	Green	Blue
Otherwise, if the bomb's serial number contains C, L, R, X, 1 or 8	Red	Magenta	Green	Blue	Yellow
Otherwise, if the second numerical digit of the controller's serial number matches the number of batteries on the bomb	Red	Blue	Yellow	Green	Magenta
Otherwise	Green	Red	Yellow	Blue	Magenta

Note: Ground (GND) is always coded with white.

On the Subject of Connection Check

What is this, some kind of circuit visualization? I don't even care anymore...

- This module contains 4 number pairs placed on each side of 4 LEDs and a "Check" button.
- To disarm this module, you must follow these steps:



1. Find out in which chart you will be looking for connections, using the rules given below.
2. For each LED look at the numbers on each side of it and check if there is a line connecting the circles denoted with those numbers in the right chart.
3. If there is such a connection, switch the LED to GREEN, otherwise switch it to RED.
4. Press the "CHECK" button. If LED positions are correct, the module will disarm. Otherwise the bomb will register a strike.

To determine the right chart on the next page you will need a character of the bomb's serial number. Use the following rules to find out which character you need. Then, on the next page, search for that character in the codes that label the charts. The chart with a code containing your character is the chart you are looking for.

If all of the numbers on this module are **distinct**, use the **last** character of the serial number.

Otherwise, if there is **more than one "1"** on the module, look at the **first** character of the serial number.

Otherwise, if there is **more than one "7"** on the module, look at the **last** character of the serial number.

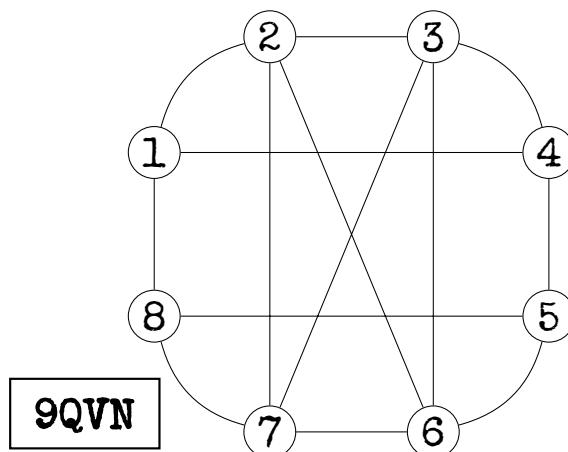
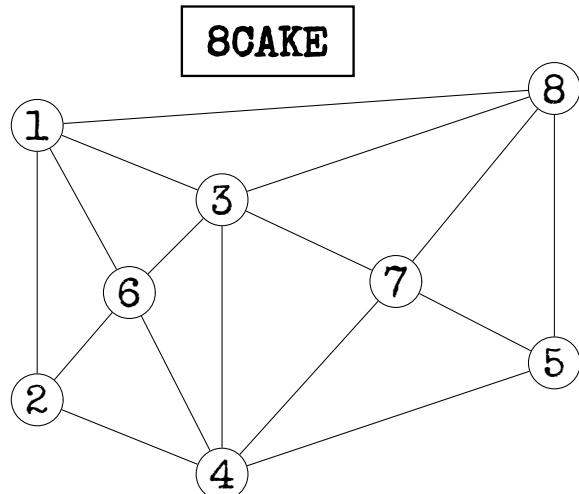
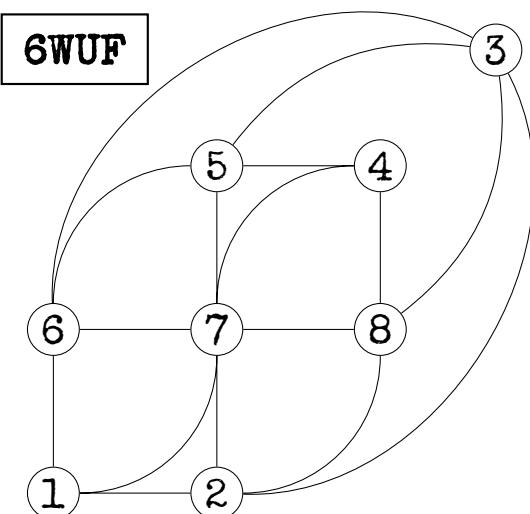
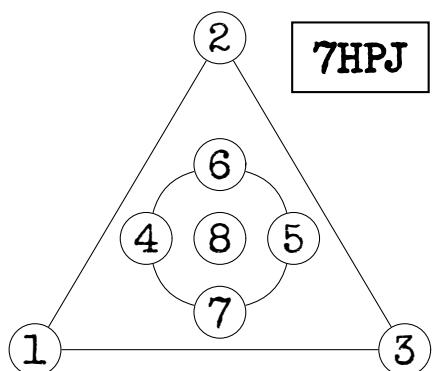
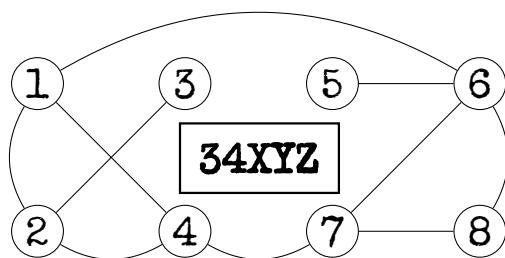
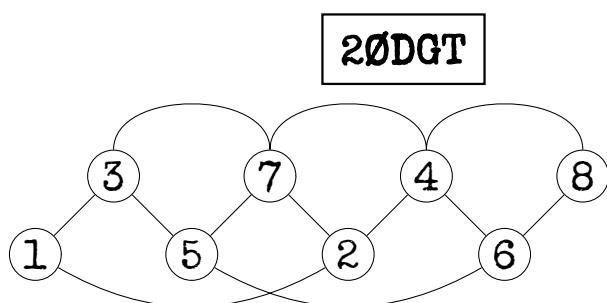
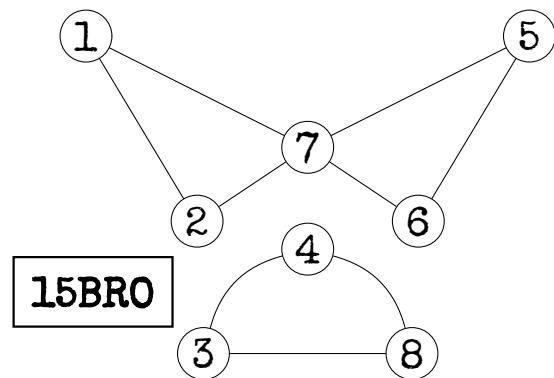
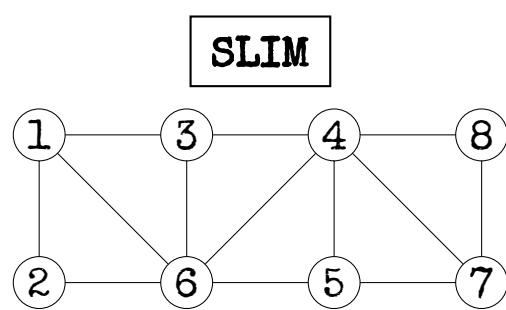
Otherwise, if there are **at least three "2"** on the module, look at the **second** character of the serial number.

Otherwise, if there is **no "5"** on the module, look at the **fifth** character of the serial number.

Otherwise, if there are **exactly two "8"**s on the module, look at the **third** character of the serial number.

Otherwise, if there are **more than 6 batteries or no batteries** on the bomb, look at the **last** character of the serial number.

Otherwise, **count the number of batteries** on the bomb. Use that number to decide which character of the serial number you should look at. E.g.: if there are 3 batteries, look at the third character of the serial number.



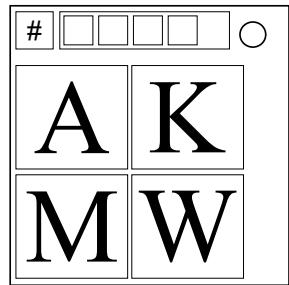
On the Subject of LED Encryption

Ooooh, shiny lights and buttons. Touchy touchy!

- Two to five LEDs are installed at the top of the module, representing stages. To disarm the module, these stages must be solved in order.
- Four buttons with four different letters are shown. The letters change at each stage.
- The current stage is indicated by a number in the top left of the module.
- The current stage's multiplier is indicated by that stage's LED according to the following table:

Red	Green	Blue	Yellow	Purple	Orange
2	3	4	5	6	7

- Assign each letter of the alphabet to the numbers 0-25 (A = 0, B = 1, C = 2, etc.).
- A button is correct if its letter value, multiplied by the current stage's multiplier, modulo 26, is equal to the value of the letter on its diagonally opposite button.
- At each stage, press a correct button. There may be more than one possible answer.



On the Subject of Broken Buttons

How did they get invisible ink to even work like that?

- A broken buttons module will have 2 submit buttons at the top of it and 12 buttons below them.
- Depending on the 12 buttons, follow the first rule that applies.
- Repeat the rules until it tells you to press the correct submit button, which will defuse the module.
- Every time a button is successfully pressed, the button's text will change.
- If the defuser presses an incorrect button, it will give a strike.
- By default the correct submit button is the left one.
- After successfully pressing 5 buttons, press the correct submit button.

SUBMIT	SUBMIT	
THIS	ONE	BOMB
DVI-D		SUBMIT
BOOM	SWITCH	SEA
WIRE	THING	BOB

Rules:

If the defuser sees the word *sea*, press a button labeled *sea*.

Otherwise, if any button on the third or first row starts with the letter T, press it.

Otherwise, if the word *one* and *submit* appear on buttons, the correct submit button will be the first one and press the button labeled *one*.

Otherwise, if a button is literally blank, press that button.

Otherwise, if the word *other* is on a button, the correct submit button changes to the other submit button and press the button labeled *other*.

Otherwise, if there are any duplicate words, click one of the buttons labeled with the duplicate word.

Otherwise, if a port name and the word *port* or *module* appear on the buttons, press a button labeled a port name.

Otherwise, if a button has less than 3 characters on it, press that button.

Otherwise, if the words *bomb* and *boom* are present, press the button labeled *boom*.

Otherwise, if the words *submit* and *button* appear on buttons, press the correct submit button at the top.

Otherwise, if the words *column* and either *seven* or *two* appear on buttons, press any button in the same row as a button labeled *column*.

Otherwise, if a button hasn't been correctly pressed yet, press the 3rd button in the 2nd row.

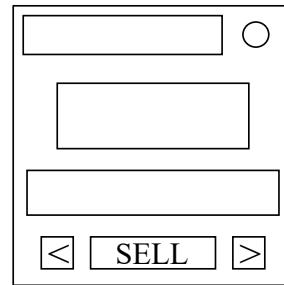
Otherwise, if the first button you pressed had the letter E in the word, the right submit is actually correct.

Lastly, press the correct submit button.

On the Subject of Ice Cream

Simon screams for ice cream!

- The module has a display with a customer's name, and a display with five types of ice cream.
- Using the table, determine the allergies of the customer.
- Go through the first applicable flavour list below and select the first ice cream flavour that the customer is not allergic to which is also currently available in the flavour list on the bomb. **All flavours are made out of real ingredients.**
- Press the 'sell' button once the correct ice cream flavour is selected. Repeat for all three customers.
- Note that the ice cream parlour is not open all day! Only sell ice cream on even-numbered minutes! Selling ice cream on an odd-numbered minute causes a strike.



Recipes for Ice Cream Flavours:

- Tutti Frutti:** Vanilla Flavour, Fruit Pieces*.
- Rocky Road:** Chocolate Flavour, Nuts, Marshmallows.
- Raspberry Ripple:** Vanilla Flavour, Raspberry Sauce.
- Double Chocolate:** Chocolate Flavour, Chocolate Chips.
- Double Strawberry:** Strawberry Flavour, Strawberries.
- Cookies and Cream:** Vanilla Flavour, Cookies.
- Neapolitan:** Strawberry Flavour, Chocolate Flavour, Vanilla Flavour.
- Mint Chocolate Chip:** Mint Flavour, Chocolate Chips.
- The Classic:** Vanilla Flavour, Chocolate Sauce, Cherry.
- Vanilla:** Vanilla Flavour.

Allergy Converter**:

- | | |
|------------------------|--------------------------|
| • Chocolate: 0 | • Mint: 5 |
| • Strawberry: 1 | • Fruit: 6*** |
| • Raspberry: 2 | • Cherry: 7 |
| • Nuts: 3 | • Marshmallows: 8 |
| • Cookies: 4 | |

* Fruit pieces include strawberries, bananas, cherries, and raspberries.

** None of the customers are allergic to vanilla flavouring.

*** Having a fruit allergy implies you are also allergic to strawberries, raspberries, and cherries.

To find out which ingredients the customer is allergic to, use the allergy table.

The rows are the customers, and the columns are the last digit of the serial number.

Allergy Table:

	0-1	2-3	4-5	6-7	8-9
Mike	1-5-0	6-8-3	0-7-1	4-3-2	3-6-1
Tim	0-8-3	2-1-4	4-3-5	2-6-7	1-4-3
Tom	8-4-5	1-6-7	2-5-6	3-7-5	3-6-1
Dave	2-6-7	0-1-4	8-2-3	7-8-1	5-7-3
Adam	3-4-1	3-6-2	0-2-1	2-4-7	8-5-6
Cheryl	1-6-3	7-5-2	1-4-5	4-2-0	3-7-5
Sean	4-6-1	2-3-6	1-5-7	6-8-2	2-7-4
Ashley	6-2-5	4-1-7	0-8-2	1-2-6	3-6-7
Jessica	4-2-6	1-2-3	0-3-4	6-5-0	4-7-8
Taylor	6-3-5	5-1-2	4-2-6	7-1-0	3-7-2
Simon	0-3-5	1-6-4	5-4-8	2-0-7	7-3-6
Sally	4-6-3	1-0-2	6-7-4	2-5-8	0-3-1
Jade	3-7-1	0-8-2	7-1-3	6-7-8	4-5-1
Sam	2-4-1	7-8-0	3-4-6	1-0-3	6-5-2
Gary	1-2-5	6-8-0	3-2-1	7-4-5	1-8-4
Victor	0-3-1	2-5-7	3-4-6	6-7-1	5-3-0
George	8-1-2	6-4-8	0-4-3	1-6-4	3-2-5
Jacob	7-3-2	1-5-6	5-4-7	3-4-0	6-2-1
Pat	5-6-2	1-3-6	3-4-7	2-0-5	8-1-3
Bob	5-6-8	2-1-0	4-8-2	4-2-5	0-5-1

To find out which flavours to sell to the customer first, use the following table of flavour lists.

Read the table in normal reading order (left to right, then top to bottom) and choose the first applicable list.

Flavour List Table:

If there are more lit than unlit indicators:	Otherwise, if there is an empty port plate present on the bomb:
<ul style="list-style-type: none"> • Cookies and Cream • Neapolitan • Tutti Frutti • The Classic • Rocky Road • Double Chocolate • Mint Chocolate Chip • Double Strawberry • Raspberry Ripple • Vanilla 	<ul style="list-style-type: none"> • Double Chocolate • Mint Chocolate Chip • Neapolitan • Rocky Road • Tutti Frutti • Double Strawberry • Cookies and Cream • Raspberry Ripple • The Classic • Vanilla
Otherwise, if there are 3 or more batteries:	Otherwise:
<ul style="list-style-type: none"> • Neapolitan • Tutti Frutti • Cookies and Cream • Raspberry Ripple • Double Strawberry • Mint Chocolate Chip • Double Chocolate • The Classic • Rocky Road • Vanilla 	<ul style="list-style-type: none"> • Double Strawberry • Cookies and Cream • Rocky Road • The Classic • Neapolitan • Double Chocolate • Tutti Frutti • Raspberry Ripple • Mint Chocolate Chip • Vanilla

On the Subject of the Blind Alley

What? Where?

The module appears blank, but has eight touch-sensitive regions laid out as in the following diagram. Touch the regions that have the most conditions met in any order.



<ul style="list-style-type: none"> • There is an unlit BOB indicator. • There is a lit CAR indicator. • There is a lit IND indicator. • There is an even number of battery holders. 	<ul style="list-style-type: none"> • There is an unlit CAR indicator. • There is an unlit NSA indicator. • There is a lit FRK indicator. • There is an RJ-45 port. 	
<ul style="list-style-type: none"> • There is an unlit FRQ indicator. • There is an unlit IND indicator. • There is an unlit TRN indicator. • There is a DVI-D port. 	<ul style="list-style-type: none"> • There is an unlit SIG indicator. • There is an unlit SND indicator. • There is a lit NSA indicator. • There is an even number of batteries. 	<ul style="list-style-type: none"> • There is a lit BOB indicator. • There is a lit CLR indicator. • There is a PS/2 port. • There is a serial port.
<ul style="list-style-type: none"> • There is a lit FRQ indicator. • There is a lit SIG indicator. • There is a lit TRN indicator. • There is an even digit in the serial number. 	<ul style="list-style-type: none"> • There is an unlit FRK indicator. • There is a lit MSA indicator. • There is a parallel port. • There is a vowel in the serial number. 	<ul style="list-style-type: none"> • There is an unlit CLR indicator. • There is an unlit MSA indicator. • There is a lit SND indicator. • There is a stereo RCA port.

On the Subject of Logic

Logic is easy, but logic AND bomb defusal might not.

- Each row displays 3 letters. Each letter represents a statement which can be found in table 1.
- On each row, solve the statements inside the brackets first.
- Statements are joined with logical connective symbols. Find how each symbol works in table 2.
- Apply negation (NOT gate: false becomes true and true becomes false) to each statement first if the red LED above that statement is lit.
- Find the end result of each row, and then use the T/F button to the right to select True/False. Press “Submit” when done.

See Appendix A for indicator identification reference.

See Appendix B for battery identification reference.

See Appendix C for port identification reference.

Table 1: Statement list

Letter	Statement	Letter	Statement
A	Number of batteries = number of indicators	N	More than 2 battery holders
B	Serial number has more letters than digits	O	Has both lit and unlit indicators
C	Has IND indicator	P	Has parallel port
D	Has FRK indicator	Q	Exactly 2 ports
E	Exactly 1 unlit indicator	R	Has PS/2 port
F	More than 1 port type	S	Sum of digits in serial number > 10
G	2 batteries or more	T	Has MSA indicator
H	Less than 2 batteries	U	Exactly 1 battery holder
I	Last digit of serial number is odd	V	Serial number contains vowels
J	More than 4 batteries	W	No indicators
K	Exactly 1 lit indicator	X	Exactly 1 indicator
L	More than 2 indicators	Y	More than 5 ports
M	No duplicate ports	Z	Less than 2 ports

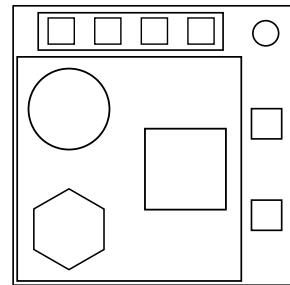
Table 2: Logical connective symbol list

Logical Connective	Symbol	Logic Gate Equivalent	Meaning
Conjunction	\wedge	AND	Returns true if all inputs are true. Else returns false.
Disjunction	\vee	OR	Returns true if any input is true. Else returns false.
Exclusive Disjunction	$\vee\!\vee$	XOR	Returns true if exactly one input is true. Else returns false.
Alternative Denial	!	NAND	Returns false if all inputs are true. Else returns true.
Joint Denial	\downarrow	NOR	Returns false if any input is true. Else returns true.
Biconditional	\leftrightarrow	XNOR	Returns false if exactly one input is true. Else returns true.
Implication (Left)	\rightarrow	-	Returns false when left input is true and right input is false. Else returns true.
Implication (Right)	\leftarrow	-	Returns false when left input is false and right input is true. Else returns true.

On the Subject of Button Sequences

Click. Click. Kaboom!

- Within the module, there are several panels with three buttons on them. Only one panel is visible at a time.
 - Switch to the next panel by using the down button and the previous panel by using the up button.
 - Press the buttons as directed by the following tables.
- Button occurrences are cumulative over all panels within the module. If both conditions match, refer to "Releasing a Held Button".
- The LEDs found next to each button display green if the button was pressed or held successfully, or if they were not pressed and the panel has been submitted successfully. They display orange if the corresponding button has not been dealt with yet. They display red if the corresponding button caused a strike.



Red Button Occurrence	Press if label is...*	Press if shape is...
First or Sixth	Abort	Square
Second or Seventh	Detonate	Hexagon
Third or Eighth	Hold	Circle
Fourth or Ninth	Abort	Circle
Fifth or Tenth	Press	Square

Yellow Button Occurrence	Press if label is...*	Press if shape is...
First or Sixth	Detonate	Circle
Second or Seventh	Hold	Hexagon
Third or Eighth	Abort	Square
Fourth or Ninth	Press	Circle
Fifth or Tenth	Hold	Hexagon

Blue Button Occurrence	Press if label is...*	Press if shape is...
First or Sixth	Hold	Circle
Second or Seventh	Abort	Square
Third or Eighth	Detonate	Hexagon
Fourth or Ninth	Press	Square
Fifth or Tenth	Press	Hexagon

White Button Occurrence	Press if label is...*	Press if shape is...
First or Sixth	Hold	Hexagon
Second or Seventh	Detonate	Square
Third or Eighth	Press	Hexagon
Fourth or Ninth	Abort	Circle
Fifth or Tenth	Detonate	Square

* Due to budget cuts, the buttons will only display the first letter of each word.

Releasing a Held Button

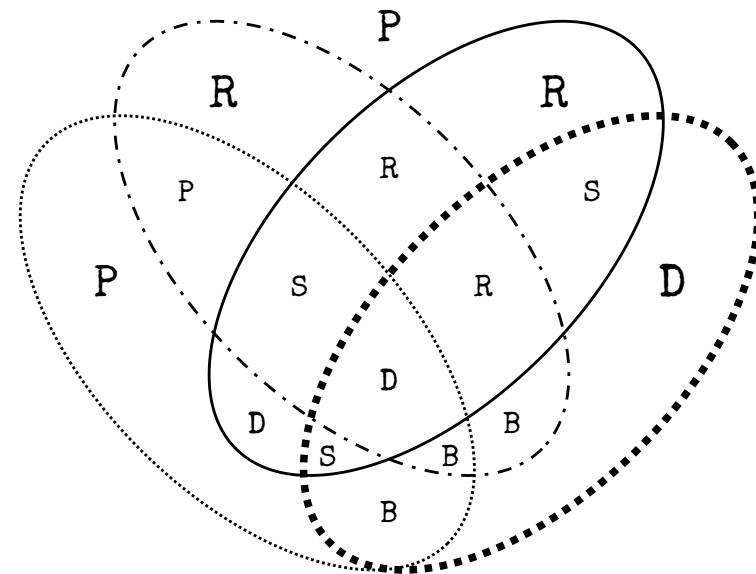
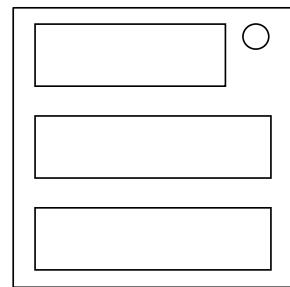
If you start holding the button down, the colored LED will light up next to the button. Based on its color you must release the button at a specific point in time:

- Blue light: release when the countdown timer has a 2 in any position.
- White light: release when the countdown timer has a 7 in any position.
- Yellow light: release when the countdown timer has a 3 in any position.
- Magenta light: release when the countdown timer has a 4 in any position.
- Any other color light: release when the countdown timer has a 0 in any position.

On the Subject of Complicated Buttons

These buttons aren't like the others. The good news is that we've found a concise set of instructions on what to do about it! Maybe too concise...

1. Look at each button: there is one color and a label on the button. Purple represents both red and blue.
2. For each button, use the Venn diagram below to decide whether or not to press the button.
3. Press the buttons in the order listed in the table. If no buttons are pressed, press the second button in the list.
4. Upon getting a strike, the entire module resets.



— - - - -	Button has red coloring
— — — — —	Button has blue coloring
.....	Button says "Press"
■ ■ ■ ■ ■ ■	Button is in the middle position

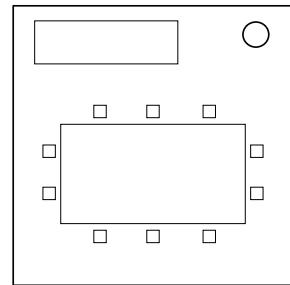
Letter	Instruction
P	Press the button
D	Do not press the button
R	Press the button if the serial number contains two or more repeated characters
S	Press the button if the bomb has a serial port
B	Press the button if the bomb has two or more battery holders

	Label of First Button	0-1 Batteries	2-3 Batteries	4-5 Batteries	6+ Batteries
Button order:	Press	1, 2, 3	2, 3, 1	3, 1, 2	1, 2, 3
	Hold	2, 1, 3	3, 2, 1	1, 3, 2	2, 3, 1
	Detonate	3, 1, 2	1, 2, 3	2, 1, 3	3, 1, 2

On the Subject of Symbolic Passwords

Websites allow symbols in passwords now, but this is ridiculous!

1. There are six symbols on the module. Find a 2×3 (2 high by 3 long) region in the table below with the same six symbols. **THE SYMBOLS MAY NOT BE IN THE SAME ORDER** (they will be mixed up in that 2×3 area).
2. Then use the buttons around the screen to rearrange the symbols to match the positions found in the corresponding 2×3 area in the table. The buttons have arrows next to them showing which way they move the symbols.



Ҩ	Ӷ	Ҫ	Ӯ	Ѱ	Ӯ	Ӯ
Ӑ	Ӯ	ӭ	Ҕ	Ӯ	Ӷ	☆
Ӯ	Ҕ	Ӯ	Ӯ	Ӯ	*	Ӯ
Ӯ	Ӯ	Җ	Ӯ	Ӯ	Ӯ	Ӯ
Ӯ	☆	Ӯ	Җ	Ҕ	Ѱ	Ӯ
Ӯ	Ӯ	Ӯ	Ӯ	Ӯ	Ӯ	Ӷ
Ӯ	Ӯ	Ӯ	Ӯ	☆	Ӯ	Ӯ

On the Subject of Skewed Slots

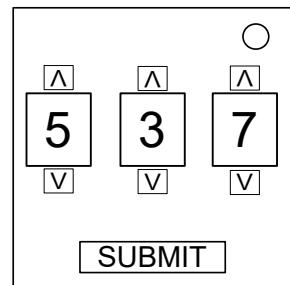
This has to be illegal somehow...

See Appendix A for indicator identification reference.

See Appendix B for battery identification reference.

See Appendix C for port identification reference.

See Appendix Math for a mathematical terms reference.



- A skewed slots module contains 3 numeric displays and a submit button on it.
- Based on the current display on the slots, submit the correct digits based on following sections of rules. Each section is labeled with which slot it applies to.
- After all the rules have been applied, if the number is below 0, add 10. Otherwise if the number is above 9, subtract 10. Repeat this until the number is between 0-9.
- If you submit the incorrect digits, the slots will automatically spin and a strike will be assigned.

NOTE: The original digit is the digit before it was modified at all.

All Slots

Replace any 2 with a 5 and any 7 with a 0.

For every lit indicator add 1 to the number and subtract 1 for every unlit indicator.

If the number is a multiple of 3, add 4 to it.

Otherwise, if the number is greater than 7, multiply it by 2.

Otherwise, if the number is less than 3 and it's an even number, divide it by 2.

Otherwise, if there is an RCA or a PS/2 port on the bomb, skip the rest of the rules in this section.

Otherwise, take the original digit and add the number of batteries on the bomb.

1st Slot

If the number is even and greater than 5, divide it by two.

Otherwise, if the number is prime, add the rightmost number in the serial number.

Otherwise, if there is a parallel port on the bomb, multiply it by -1.

Otherwise, if the original digit to the right is odd, leave this number unchanged.

Otherwise, subtract 2 from it.

2nd Slot

If there is a unlit BOB indicator, leave this number unchanged.
Otherwise, if the number is 0, add the original digit from the 1st display.
Otherwise, if the number is in the Fibonacci sequence, add the next number from the Fibonacci sequence based on the first occurrence of the number.
Otherwise, if the number is greater than or equal to 7, add 4.
Otherwise, multiply it by 3.

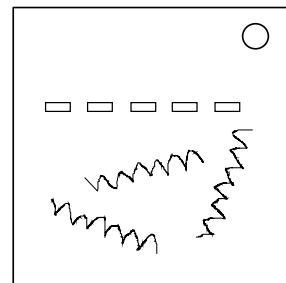
3rd Slot

If there is a serial port on the bomb, add the largest number from the serial number.
Otherwise, if the original digit is the same as any of the other original digits, leave this number unchanged.
Otherwise, if the number is greater than or equal to 5, add up all the individual digits in the binary form of the original digit for the new number.
Otherwise, add 1 to the number.

On the Subject of Binary LEDs

Binary is a time-honored tradition of communication with tiny blinking lights.

- Interpret the binary code from the five LEDs. The bit farthest left is the most significant.
- The code will follow one of the eight numeric sequences below. The sequence oscillates forwards and backwards without repeating the ends.
- Some numbers in the sequence have a letter underneath it. Cut the wire of the matching color while this part of the sequence is displayed.
- Only one wire needs to be cut successfully.



17	15	6	2	24	8	26	25	21	24	1	15	18	8
			G		R		B						
18	15	19	31	12	6	19	21	11	16	19	2	1	29
				B				G			R		
8	25	1	15	20	15	9	3	6	24	1	24	5	26
	G	B							R				
21	27	6	12	27	20	7	1	19	15	3	13	9	28
						B	R				G		
3	21	14	22	7	28	16	27	22	17	26	2	31	15
					G			B		R			
8	22	30	19	1	25	31	16	9	7	6	13	9	7
R					B					G			
5	18	12	7	5	12	31	16	10	15	17	9	12	25
		R			G				B				
4	20	18	25	20	4	24	29	17	16	12	16	29	19
					G				R	B			

Color Key:	R	red
	G	green
	B	blue

On the Subject of Sword

These letters are confusing. I think they're in the wrong order.

The display shows a scrambled word. Decipher the word and punch it in to solve this module.

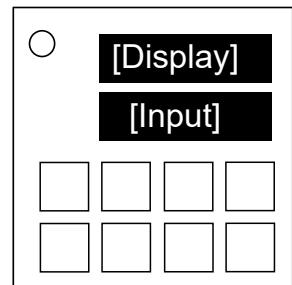
The diagram consists of several rectangular boxes. At the top is a black-bordered box containing the word "[Display]" in white. Below it is another black-bordered box containing the word "[Input]" in white. A line connects the bottom right corner of the "[Input]" box to a 2x4 grid of empty black-bordered boxes arranged in two rows of four.

On the Subject of Anagrams

Randomly punching in the letters will eventually give me another word. One of the arrangements must work, right?

The display shows a word. Rearrange the letters to form another word. It's got to work. It just has to.

Note that the status light is on the top left of the module.



On the Subject of English Tests

You've lived all your life writing however you wanted without giving a second thought to who would be reading what you misspelled. But now, your life depends on your grammar and orthography, and this bomb is very nitpicky. You should of paid more attention in you're English class.

...Oh, carp.

See Appendix: Grammar for more information.

- An English sentence with one *italic* word or phrase will be displayed on the large LCD display.
- Your goal is to select the correct word that fills in the blank.
- If multiple words appear to complete the sentence correctly, remember that this module is a pedantic prescriptivist!
- There are three rounds. Correctly complete all the sentences to disarm the module.
- If a mistake is made during the course of the test, the question number will reset to 1.

Question 1/3

We need to *diffuse* this bomb quickly.

diffuse defuse



On the Subject of Color Math

So many colors!

- This module contains 2 rows of LEDs, left (represents the base number) and right (represents adder/subtractor/multiplier/divider and/or answer).
- Numbers in this module are ranged from 0-9999 inclusive. LEDs are read from the top (Most Significant Digit) to bottom (Least Significant Digit).
- Use Table 1 to convert left side LEDs into the base number.
- The display at the middle of this module shows the action that needs to be performed: [A]dd / [S]ubtract / [M]ultiply / [D]ivide.
- If the text in the display is GREEN, use Table 2 to convert right side LEDs into the adder/subtractor/multiplier/divider.
- If the text in the display is RED, ignore right side LEDS and then use Table 3 to determine the adder/subtractor/multiplier/divider.
- Perform the action required and use table 4 to convert the answer into colors, then input it on right side LEDs. Push SUBMIT to check.

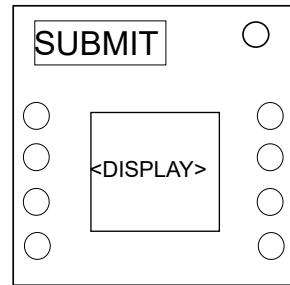


Table 1: Left side LEDs to numbers conversion table

LED No.	Blue	Green	Purple	Yellow	White	Magenta	Red	Orange	Gray	Black
1	6	1	2	4	9	0	8	5	3	7
2	8	1	9	4	3	6	0	5	7	2
3	4	1	9	7	0	2	5	3	8	6
4	6	8	7	5	4	9	1	3	0	2

Table 2: Right side LEDs to numbers conversion table

LED No.	Blue	Green	Purple	Yellow	White	Magenta	Red	Orange	Gray	Black
1	0	6	5	4	3	7	9	8	1	2
2	2	9	8	0	5	3	4	7	1	6
3	5	0	6	4	2	7	9	3	8	1
4	5	4	2	9	8	6	7	1	3	0

Table 3: Finding ASMD in case of red display

Digit No.	0-1 Batteries	2-3 Batteries	4-5 Batteries	6+ Batteries
1 (MSD)	First digit in serial number	0	Amount of vowels in serial number	DVI-D port counts
2	Amount of unlit indicators	PS/2 port counts	Amount of battery holders	5
3	9	Amount of letters in serial number	Serial port counts	Amount of consonants in serial number
4 (LSD)	RJ-45 port counts	Last digit in serial number	4	Amount of lit indicators

Table 4: Answer to colors conversion table

LED No.	0	1	2	3	4
1	Gray	Green	Orange	White	Purple
2	Blue	Green	Black	Purple	Magenta
3	Magenta	Yellow	Blue	Gray	Red
4	Gray	Blue	Purple	Red	Yellow

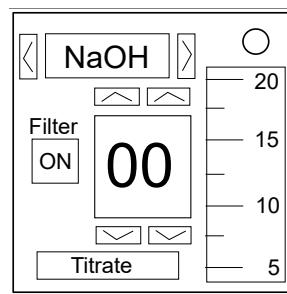
LED No.	5	6	7	8	9
1	Blue	Magenta	Black	Yellow	Red
2	Red	Gray	Yellow	Orange	White
3	Black	Green	Purple	Orange	White
4	Magenta	Black	Orange	Green	White

- Note: On the subtraction, if the answer is negative, answer as positive.
- Note: On the division, if the answer contains remainder, ignore the remainder.
- Note: If the answer exceeded 9999, please divide the answer with 10000 and answer with the remainder. (Or in short, modulo it with 10000.)

On the Subject of Neutralization

The rules are simple: neutralize or be neutralized.

- The module is disarmed by successfully neutralizing an acid contained in a tube by titrating it with a chemical base.
- In order to solve the module, the type of base, amount of base, and filter state must all be correct.
- Once the appropriate conditions are set, press “Titrate” to confirm the solution.
- An incorrect input yields a strike. The correct answer remains unchanged.
- Useful info may be found in [Appendix NT27: Chemical Information](#).



Determining Titrants

The acid type can be determined using the following chart:

Solution Color	Acid Type
Red	Hydrogen bromide
Yellow	Hydrogen fluoride
Green	Hydrogen chloride
Blue	Hydrogen iodide

The base that must be used to titrate can be determined via the following ruleset:

- If the bomb has an NSA indicator and exactly 3 batteries, add ammonia.
- Otherwise, if the bomb has a lit CAR, FRQ, or IND indicator, add potassium hydroxide.
- Otherwise, if the bomb has no ports and the serial number has a vowel, add lithium hydroxide.
- Otherwise, if the acid's chemical formula has a letter in common with an indicator present on the bomb, add potassium hydroxide.
- Otherwise, if the number of D batteries is greater than the number of AA batteries, add ammonia.
- Otherwise, if the anion's atomic number is less than 20, add sodium hydroxide.
- Otherwise, add lithium hydroxide.

Determining Concentrations

The concentration of the acid can be determined via the following process:

- Start with the atomic number of the anion of the acid.
- Subtract the atomic number of the cation of the base.
- If the anion or cation has a vowel in the chemical symbol, subtract 4.
- If the anion and cation's chemical symbols have the same number of characters, multiply by 3.
- Take the least significant digit of the result (removing negative signs).
- If the number is 0, the number becomes the volume of acid doubled then divided by 5.
- Divide by 10. This is the concentration of the acid.

The concentration of the base can be determined via the following ruleset:

- If there are more battery holders than port types and more battery holders than indicators, the concentration is 5.
- If there are more port types than battery holders and more port types than indicators, the concentration is 10.
- If there are more indicators than battery holders and more indicators than port types, the concentration is 20.
- If there are any ties for the most, the concentration is either 5, 10, and 20, whichever is closest to the cation's atomic number.
- However, if the titration combination is HI and KOH or HCl and NH₃, the concentration is always 20.

Determining Drop Count

- Start with 20 and divide by the concentration of the base.
- Multiply by the volume of acid and concentration of the acid.
- The result is the number of drops required to successfully titrate.

Determining Solubility

- If the module's acid/base combination on the following chart has "NS" for "Not Soluble", the filter must be turned ON before the base is added.
- Otherwise, the filter must be turned OFF.

	NH ₃	KOH	LiOH	NaOH
HBr	S	NS	NS	S
HF	NS	S	NS	S
HCl	NS	NS	S	NS
HI	S	S	S	NS

APPENDIX NT27: Chemical Information

NT27.1: Bases

<u>Name</u>	<u>Chemical Formula</u>	<u>Cation</u>	<u>Chemical Symbol</u>	<u>Atomic Number</u>
Ammonia	NH ₃	Hydrogen	H	1
Lithium hydroxide	LiOH	Lithium	Li	3
Sodium hydroxide	NaOH	Sodium	Na	11
Potassium hydroxide	KOH	Potassium	K	19

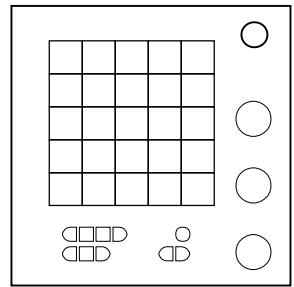
NT27.2: Acids

<u>Name</u>	<u>Chemical Formula</u>	<u>Anion</u>	<u>Chemical Symbol</u>	<u>Atomic Number</u>
Hydrofluoric acid	HF	Fluorine	F	9
Hydrochloric acid	HCl	Chlorine	Cl	17
Hydrobromic acid	HBr	Bromine	Br	35
Hydroiodic acid	HI	Iodine	I	53

On the Subject of Battleship

FIRE! ... (splash) Missed.

Attention, Cadet. We've narrowed the enemy's locations to within this 5×5 grid. The targets in this area are concealed, but we do have a fair bit of intelligence on them.



We suspect this information may not be enough to determine with accuracy where the enemy forces are deployed. This is where you come in. We need you to figure out which locations within the battle arena we can safely survey without being seen:

- Take the first letter and the first digit of the serial number. Add or subtract 5 to the letter or digit until it is in the range A-E or 1-5. This is the first safe location.
- Do the same for the second letter and the second digit. Keep going until you run out of either letters or digits.
- Finally, convert the number of ports into a letter A-E and the number of indicators plus batteries into a digit 1-5 in the same manner. This is your final safe location.
- In each case, the letter indicates columns (left to right), the number indicates rows (top to bottom).

Attention, Ensign. We need you to ascertain the locations of all enemy vessels. When you have done so, the module is disarmed. The following tools are at your disposal:

- Survey the safe locations by using the radar tool. Using the radar on any unsafe location reveals our position to the enemy, so don't do that.
- Use the water tool to mark locations that definitely have no enemy vessel in them. You may also click the number above a column or beside a row to mark every unmarked location in that row/column as water.
- Use the torpedo to attack the enemy. Do not waste torpedos on water!

Our intelligence indicates that:

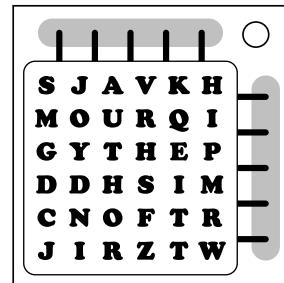
- Every enemy ship is either horizontal or vertical.
- None of the vessels are directly adjacent, not even diagonally.
- We know how many squares in each row and each column have a piece of a ship in them. This is indicated by the numbers along the edges of the grid.
- We also know how many ships of each size there are. This is indicated by the symbols below the grid.

Good luck. Make us proud.

On the Subject of Word Search

LZIEAJDHARDERBNCOJWTHANPQIEYBZITLOOKSYWH

A field of 36 letters will appear on the screen within the module. Some of these letters will spell out words, which may be spelled backwards and appear in any direction.

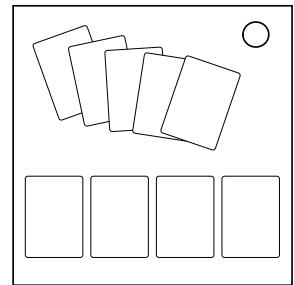


1. The chart below contains boxes with letters in the corners. For each of the four letters in the corners of the display, find a box on the chart that has that letter in the same corner.
2. Once all the relevant boxes have been located, use the last digit of the serial number (even or odd) to determine the correct words to reference.
3. Only one of those words will appear on the display. Select the first and last letter of the correct word to disarm the module. The bomb will record a strike if any other words are selected.

[even]	HOTEL	SEARCH	ADD	SIERRA	FINISH	
—	—	—	—	—	—	
[odd]	DONE	QUEBEC	CHECK	FIND	EAST	
—	V	U	S	Z		
PORT	BOOM	LINE	KABOOM	PANIC	MANUAL	DECOY
—	—	—	—	—	—	—
COLOR	SUBMIT	BLUE	ECHO	FALSE	ALARM	CALL
P	Q	N	X	F	Y	
SEE	INDIA	NUMBER	ZULU	VICTOR	DELTA	HELP
—	—	—	—	—	—	—
TWENTY	NORTH	LOOK	GREEN	XRAY	YES	LOCATE
T	I	M	E	D	A	
ROMEO	TRUE	MIKE	FOUND	BOMBS	WORK	TEST
—	—	—	—	—	—	—
BEEP	EXPERT	EDGE	RED	WORD	UNIQUE	JINX
K	B	W	H	J	O	
GOLF	TALK	BRAVO	SEVEN	MODULE	LIST	YANKEE
—	—	—	—	—	—	—
LETTER	SIX	SERIAL	TIMER	SPELL	TANGO	SOLVE
R	L	C	G			
CHART	MATH	READ	LIMA	COUNT		
—	—	—	—	—		
OSCAR	NEXT	LISTEN	FOUR	OFFICE		

On the Subject of Points of Order

We are playing weird 4-card KTANE Mao. Play begins with me and proceeds in a clockwise direction.



- Welcome to this game of Mao. You joined at just the right time. We've already played five cards in accordance with the current rules of the game.
- You have four cards on your hand. Once you pick up your cards, you must play a valid card within 5 seconds to defuse the module.
- Playing a bad card or failing to play a card within 5 seconds will result in a strike. You will also receive four new cards.

To find out what the current rules of the game are, examine the cards already played and determine which two of the following rules are active and which one is inactive:

- Examine the first and second character of the serial number. Depending on whether each is a letter or a number, the next card's suit must be one of the following:

First character	Second character	Previously-played suit			
		♠	♥	♣	♦
Letter	Letter	♠ or ♥	♥ or ♣	♣ or ♦	♦ or ♠
Letter	Number	♠ or ♦	♥ or ♠	♣ or ♥	♦ or ♣
Number	Letter	♥ or ♣	♣ or ♦	♦ or ♠	♠ or ♥
Number	Number	♦ or ♣	♠ or ♦	♥ or ♠	♣ or ♥

- Take the alphabetic position of the fourth character of the serial number and add/subtract 3 until it's in the range 3–5. Ranks must alternate between being divisible and not divisible by this number.
- Take the alphabetic position of the fifth character of the serial number and add/subtract 3 until it's in the range 0–2. Call this number x . Ranks of consecutive cards must have a difference of $x + 2$ or $x + 3$ (with wraparound allowed).

Ranks are considered to be numbered from 1 (Ace) to 13 (King).

Only one of the four cards in front of you is valid to play under the two active rules.

On the Subject of Tic-Tac-Toe

All those years of getting ties in Tic-Tac-Toe might finally pay off.

To defuse this module, all nine buttons must be filled with “X”s and “O”s.

The display labeled “Up Next:” shows either an “X” or an “O”.

The keypad displays some numbers between 1 and 9 and some already placed “X”s and “O”s. After placing a piece, the displays go blank.

The numbers in the chart on the following page indicate the location on the keypad where each piece should be placed.

Use the rules below to determine the starting row:

1. If the last digit of the serial number is even, the starting row is either 5, 6, 7, 8, or 9. Otherwise, the starting row is either 1, 2, 3, or 4.
2. If there is at least one parallel port, use the even values. Otherwise, use the odd values.
3. If there are more unlit indicators than lit indicators, the starting row is the lowest remaining value from rule 2.
4. If there are more lit indicators than unlit indicators, the starting row is the highest value remaining from rule 2.
5. If there are an equal number of lit and unlit indicators, the starting row is the average of the remaining values from rule 2.

In the chart, determine the appropriate placement column based on the relative number of “X”s and “O”s already on the board. Begin at the starting row and move down your selected column until you reach a number that corresponds to an unfilled spot on the keypad. If you pass row 9, continue at row 1.

If placing the piece in this location would result in a tic-tac-toe, you MUST press “PASS” and continue in the same row; otherwise, place the piece by pressing the location on the keypad and then move to the next row in the chart.

Two consecutive passes will result in a piece being placed (and displayed) in one of the available spaces. This may result in a tic-tac-toe but will not incur a strike. In such a case, move to the next row in the chart.

Upon a strike, the row resets to the initial starting row and the keypad displays the placed pieces and remaining numbers. All previous placements remain until the module is defused.

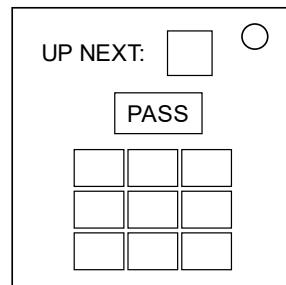


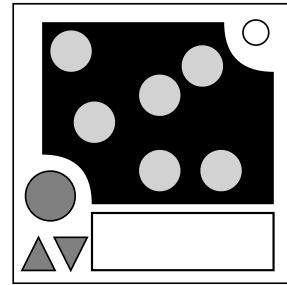
Table 1: Tic-tac-toe piece placement location chart

	More “X”s		“X”s = “O”s		More “O”s	
	Placing An:		Placing An:		Placing An:	
ROW	“X”	“0”	“X”	“0”	“X”	“0”
1	9	3	3	9	8	1
2	5	6	6	7	1	2
3	7	8	2	1	5	8
4	4	5	7	8	9	6
5	1	4	1	6	7	3
6	8	7	5	2	4	4
7	6	1	8	4	3	9
8	2	2	9	5	2	5
9	3	9	4	3	6	7

Magic On the Subject of Friendship

Hey. I could defuse this bomb in ten seconds flat.

- Locate the friendship symbols from the display in the following table.
- Out of the symbols indicating columns, disregard the one furthest left on the display that isn't exactly above or below any other friendship symbol on the display.
- Out of the symbols indicating rows, disregard the one furthest up on the display that isn't on the same height as any other friendship symbol on the display.
- Select one of the Elements of Harmony located at the intersections of the remaining rows and columns.



	J	G	U	K	V	8	L	C	H	4	W	P	M	R	
	7	S	8	U	N	J	9	Y	F	P	Q	C	R	4	
	Q	R	H	4	F	7	J	E	8	T	N	9	A	X	
	D	3	S	H	U	E	T	P	V	J	L	A	4	7	
	A	F	3	T	M	P	R	W	S	X	U	N	G	B	
	V	K	G	P	Q	D	U	L	3	H	M	R	E	C	
	4	9	T	F	B	X	D	U	Y	3	R	L	H	M	
	G	4	9	J	8	3	X	K	A	Y	S	W	7	D	
	K	T	F	B	J	Q	3	S	E	C	P	U	W	L	
	S	M	A	C	7	H	E	B	G	F	V	X	L	N	
	8	7	V	L	9	R	K	D	T	Q	B	Y	X	A	
	W	8	4	Q	G	Y	V	T	7	N	3	B	C	P	
	M	A	W	9	H	K	Y	J	N	D	X	E	8	F	
	Y	N	B	G	W	S	M	Q	K	9	C	V	D	E	

A = Altruism

H = Conscientiousness

Q = Honesty

X = Resoluteness

B = Amicability

J = Consideration

R = Inspiration

Y = Selflessness

C = Authenticity

K = Courage

S = Kindness

3 = Sincerity

D = Benevolence

L = Fairness

T = Laughter

4 = Solidarity

E = Caring

M = Flexibility

U = Loyalty

7 = Support

F = Charitableness

N = Generosity

V = Open-mindedness

8 = Sympathy

G = Compassion

P = Helpfulness

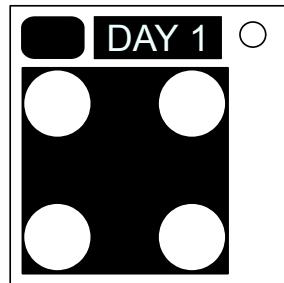
W = Patience

9 = Thoughtfulness

On the Subject of Creation

Let there be life!

- Combine elements to create a new lifeform!
- The module contains a display featuring multiple elements, a segment explaining the day #, and a segment explaining the weather.
- As you create new elements, new icons will appear.
- Be careful, though, as change in weather can affect the elements you are combining, and may require another element to negate it!
- Combining a wrong pair of elements will result in a strike and the module will reset.



Using the chart below, determine the starting element based on the weather pattern of Day 1:

Weather	Element
Rain	Water
Wind	Air
Heat Wave	Fire
Meteor Shower	Earth

Based on the starting element's position on the display, look up the correct permutation number in the following table:

	Upper-Left	Upper-Right	Bottom-Left	Bottom-Right
Water	[2]	[1]	[4]	[3]
Air	[1]	[2]	[3]	[4]
Earth	[4]	[3]	[1]	[2]
Fire	[3]	[4]	[2]	[1]
Clear weather has a permutation of [0]				

Use this number to determine which lifeform to create.

Bomb has 3 or more battery holders:

If any lit indicators are present, AND all batteries are Double A, the lifeform will be:

- [0] Bird | [1] Dinosaur | [2] Turtle | [3] Lizard | [4] Worm

Otherwise, if any lit indicators are present, the lifeform will be:

- [0] Dinosaur | [1] Turtle | [2] Lizard | [3] Worm | [4] Bird

Otherwise, if any unlit indicators are present, AND all batteries are D cell, the lifeform will be:

- [0] Turtle | [1] Lizard | [2] Worm | [3] Bird | [4] Dinosaur

Otherwise, if any unlit indicators are present, the lifeform will be:

- [0] Lizard | [1] Worm | [2] Bird | [3] Dinosaur | [4] Turtle

Otherwise, the lifeform will be:

- [0] Worm | [1] Bird | [2] Dinosaur | [3] Turtle | [4] Lizard

Bomb has 2 or less battery holders:

If there are more ports plates than battery holders:

- [0] [4] Ghost | [1] Plankton | [2] Seed | [3] Mushroom

Otherwise, if there are any duplicate ports:

- [0] [4] Plankton | [1] Seeds | [2] Mushroom | [3] Ghost

Otherwise, if there are more unlit Indicators than lit Indicators:

- [0] [4] Seeds | [1] Mushroom | [2] Ghost | [3] Plankton

Otherwise, the lifeform will be:

- [0] [4] Mushroom | [1] Ghost | [2] Plankton | [3] Seeds

Weather Rules:

Check the forecast in the top-left corner of the module, next to "Day #"

If it's raining, all "Water" must be substituted by "Fire."



If it's windy, all "Air" must be substituted by "Earth."



If there's a heat wave, all "Fire" must be substituted by "Water."



If there is a meteor shower, all "Earth" must be substituted by "Air."



If the weather is clear, then no substitutions are required. Enjoy the sunshine!



GEN. 1	Earth	Air	Fire	Water
Earth	X	Dust	Lava	Swamp
Air	Dust	X	Energy	Steam
Fire	Lava	Energy	X	Alcohol
Water	Swamp	Steam	Alcohol	X

GEN. 2	Fire	Dust	Swamp	Energy	Lava	Water
Fire	X	Ash	Tar	Plasma	X	Gen. 1
Dust	Ash	X	Pollen	X	Volcano	Cement
Swamp	Tar	Pollen	X	Life	X	Lily Pad
Energy	Plasma	X	Life	X	X	X
Lava	X	Volcano	X	X	X	Stone
Water	Gen. 1	Cement	Lily Pad	X	Stone	X

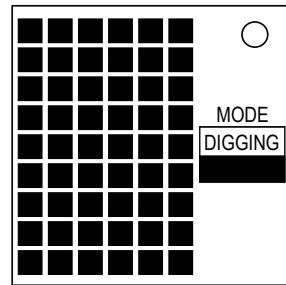
GEN. 3	Swamp	Life	Stone	Plasma	Fire	Water	Air	Earth
Swamp	X	Bacteria	X	X	Gen. 2	Gen. 2	X	X
Life	Bacteria	X	X	Ghost	X	Weeds	X	Egg
Stone	X	X	X	X	Metal	Sand	Sand	X
Plasma	X	Ghost	X	X	X	X	X	X
Fire	Gen. 2	X	Metal	X	X	Gen. 1	Gen. 1	Gen. 1
Water	Gen. 2	Weeds	Sand	X	Gen. 1	X	Gen. 1	Gen. 1
Air	X	X	Sand	X	Gen. 1	Gen. 1	X	Gen. 1
Earth	X	Egg	X	X	Gen. 1	Gen. 1	Gen. 1	X

GEN. 4	Air	Egg	Earth	Swamp	Weeds	Bacteria	Water	Life
Air	X	Bird	X	Gen. 3	X	X	Gen. 3	Gen. 3
Egg	Bird	X	Dinosaur	Lizard	Seeds	X	Turtle	X
Earth	Gen. 1	Dinosaur	X	X	Mushroom	X	Gen. 1	X
Swamp	Gen. 3	Lizard	X	X	Moss	Worm	Gen. 3	Gen. 3
Weeds	X	Seeds	Mushroom	Moss	X	X	X	Gen. 3
Bacteria	X	X	X	Worm	X	X	Plankton	X
Water	Gen. 3	Turtle	Gen. 1	Gen. 3	X	Plankton	X	Gen. 3
Life	Gen. 3	X	X	Gen. 3	Gen. 3	X	Gen. 3	X

On the Subject of Minesweeper

Somewhat Minesweeper on a bomb feels oddly redundant.

- A Minesweeper module has a grid of cells with a mode toggle button.
- By pressing the toggle button you can toggle between two different modes.
 - Dig Mode – Which uncovers a cell that you think doesn't have a mine.
 - Flag Mode – Which flags a cell that you think has a mine.



Locating the starting cell

The first cell to dig will be one of the colored squares. Start with the second digit in the serial number. If it is zero, substitute 10. Count that many colored squares in reading order, wrapping around to the top left of the grid if necessary.

Use the color found to look up a value in the table. Add this number to the numeric value of the first letter in the serial number, with A = 1, B = 2, etc. Starting from the bottom right corner, count that many colored squares in reverse reading order, looping back if necessary. This gives you the first location to dig.

Color	#
Red	5
Orange	2
Yellow	3
Green	1
Blue	6
Purple	4

NOTE: You cannot dig other cells until you have dug the correct starting cell and digging an incorrect starting cell will give you a strike, regardless of whether it's a mine or not.

Solving Minesweeper

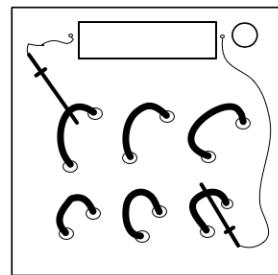
Each number on the grid represents how many mines there are in the surrounding 8 cells. Use these numbers to figure out where each mine is. Once you have achieved either all non-mine cells dug or all mine filled cells flagged, the module will solve. Digging up a cell with a mine under it will expose the mine and a strike will be given.

NOTE: Clicking on a number while digging will dig all cells around it that aren't flagged. Holding down on a cell will flag it instead of digging it.

On the Subject of Probing

Not that kind of probing...

This module has six wires and two crocodile clips. Each wire carries three alternating currents (AKA 3-phase current), each phase a different frequency. The possible frequencies are 10Hz, 22Hz, 50Hz and 60Hz.



In order to probe the circuit you need to connect the red clip to a wire and the blue clip to a different wire. Common frequencies in both wires will cancel out and the display will show the remaining frequencies, in order from lowest to highest.

If the red and white wire contains a 50Hz current connect the red clip to the wire with the frequencies 10Hz, 22Hz and 60Hz, otherwise if the red and yellow wire does not contain a 10Hz current connect the red clip to the wire with the frequencies 22Hz, 50Hz and 60Hz, otherwise connect the red clip to the wire with the frequencies 10Hz, 22Hz and 50Hz.

If the yellow and red wire contains a 10Hz current connect the blue clip to the wire with the frequencies 10Hz, 50Hz and 60Hz otherwise connect the blue clip to the wire that contains the frequencies 10Hz, 22Hz and 50Hz.

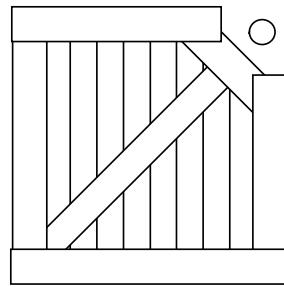
Leave the clips connected for at least six seconds to defuse. Leaving the incorrect wires connected for more than six seconds will cause a strike.

NOTE: Be aware that each time a strike is gained the frequencies in each wire may change.

On the Subject of Zoos

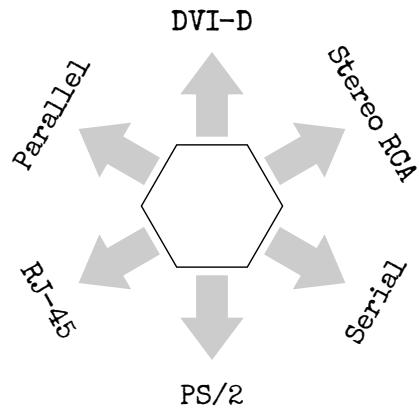
Ruff! Roar! Meow! Warble! Neigh! Tweet! Mew! Cock-a-doodle-doo! Honk! Baa! Bark!
 Bellow! Crow! Cha-caw! Buzz! Growl! Ribbit! Coo! Caw! Gobble! Screech! Whinny!
 Bleat! Hee-haw! Chirrup! Arf! Croak! Chirp! Squawk! Woof! Bow-wow! Cluck! Snort!
 Yap! Click! Squeal! Oink! Hoot! Moo! Squeak! Howl! Bah-gawk! Purr! Hiss! Quack!

Using the two animals displayed on the module, find the starting position in the grid on the next page.



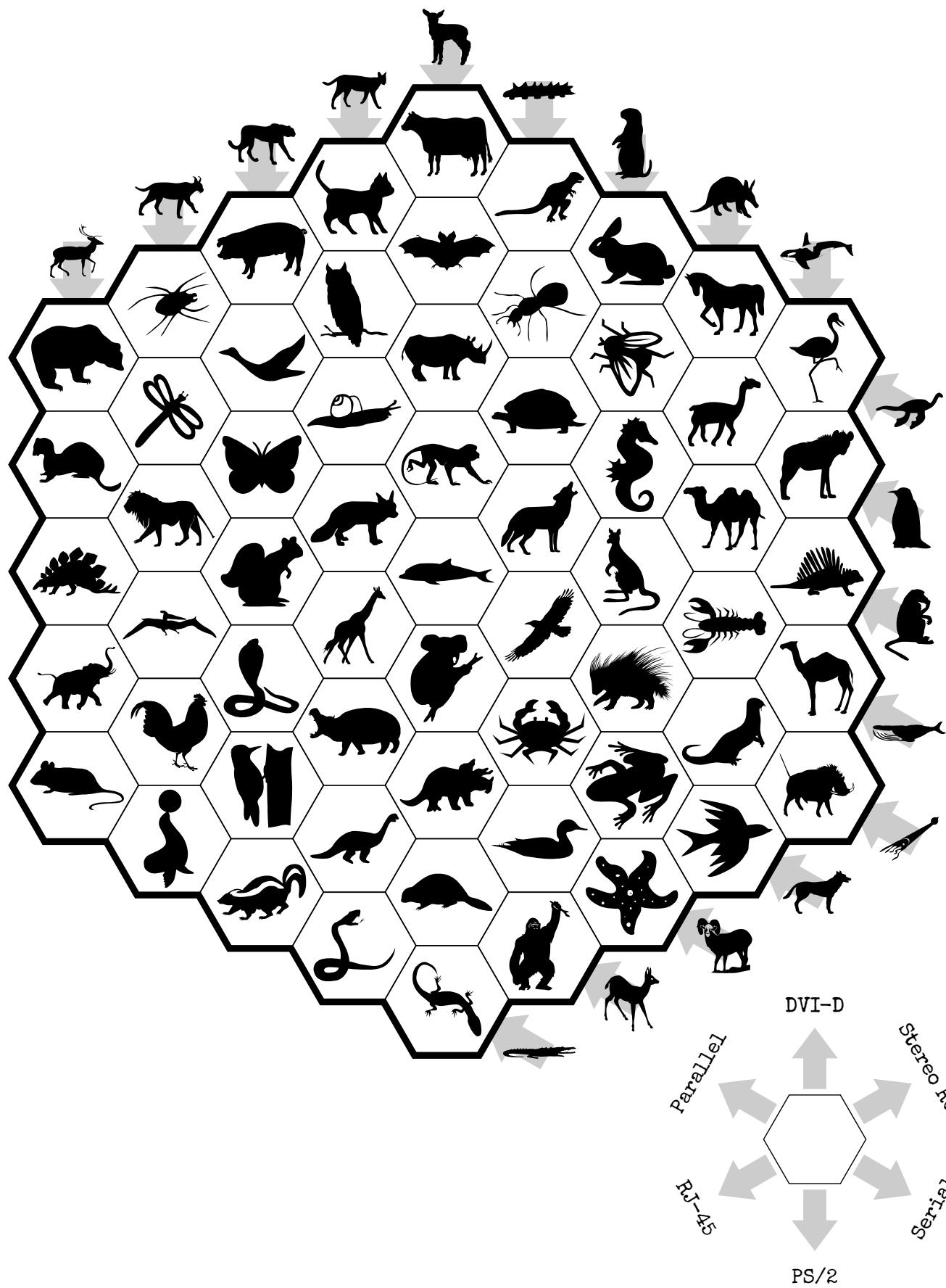
Refer to the direction chart on the right to translate port types to a direction.

Out of the port types whose associated direction allows you to form a straight line of 5 animals from the starting position, find the line pertaining to the port type of which the bomb has the most ports (including zero) that is not tied with another such port type.



If no port type satisfies this condition, form a straight line of 5 animals by moving two steps at a time. There is always only one direction in which this is possible.

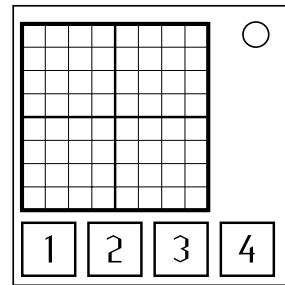
Open the sliding door on the module. Press the animals in the order they appear in the line. Avoid pressing the animals that aren't in the line. You must do this within 6 seconds before the door closes again.



On the Subject of Bitmaps

Over 18 quintillion combinations, only some of them actually matter.

- The module displays a bitmap of 64 pixels divided into four “quadrants”. Each pixel is bright (which we call “white” although it may be colored) or dark (“black”).
- There are 4 buttons underneath, labeled 1, 2, 3, and 4.
- In the following table, start at the rule whose number equals the last digit of the serial number.
- Keep going through the rules (wrapping around if necessary) until you encounter a condition that applies.
- Calculate the answer for the applicable rule. Repeatedly add or subtract 4 until the answer is between 1 and 4 and press the corresponding button to disarm the module.

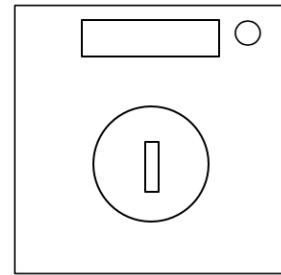


#	Rule
0	If exactly one quadrant has 5 or fewer white pixels, the answer is the number of white pixels in the other 3 quadrants.
1	If there are exactly as many mostly-white quadrants as there are lit indicators, the answer is the number of batteries.
2	If exactly one row or column is completely white or completely black, the answer is its x-/y-coordinate (starting from 1 in the top/left).
3	If there are fewer mostly-white quadrants than mostly-black quadrants, the answer is the number of mostly-black quadrants.
4	If the entire bitmap has 36 or more white pixels, the answer is the total number of white pixels.
5	If there are more mostly-white quadrants than mostly-black quadrants, the answer is the smallest number of black pixels in any quadrant.
6	If exactly one quadrant has 5 or fewer black pixels, the answer is the number of black pixels in the other 3 quadrants.
7	If there are exactly as many mostly-black quadrants as there are unlit indicators, the answer is the number of ports.
8	If there is a 3x3 square that is completely white or completely black, the answer is the x-coordinate (starting from 1) of the center of the first such square in reading order.
9	If there are exactly as many mostly-white quadrants as mostly-black quadrants, the answer is the first numeric digit of the serial number.

On the Subject of Turn The Key

How can something so simple be so infuriating?

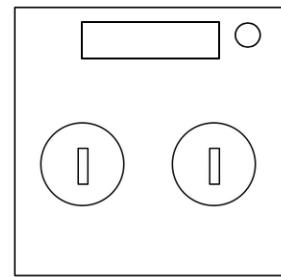
Turn the key when the bomb's timer matches the time on the display, no sooner, no later.



On the Subject of Turn The Keys

Order is everything.

This module has two keys and a display. The display indicates this module's priority.



LEFT KEY

Turn the left key after you have done all of the following:

- Turned the right key on all 'Turn the Keys' modules.
- Turned all lower priority left keys.
- Solved all Password modules.
- Solved all Who's On First modules.
- Solved all Crazy Talk modules.
- Solved all Keypad modules.
- Solved all Listening modules.
- Solved all Orientation modules.

But before you have done any of the following:

- Turned any higher priority left keys.
- Solved any Maze modules.
- Solved any Memory modules.
- Solved any Complex Wires modules.
- Solved any Wire Sequence modules.
- Solved any Cryptography modules.

RIGHT KEY

Turn the right key after you have done all of the following:

- Turned all higher priority right keys.
- Solved all Morse Code modules.
- Solved all Wire modules.
- Solved all Two Bits modules.
- Solved all The Button modules.
- Solved all Colour Flash modules.
- Solved all Round Keypad modules.

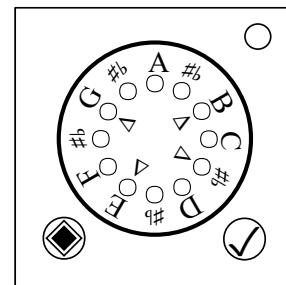
But before you have done any of the following:

- Turned any left keys.
- Turned any lower priority right keys.
- Solved any Semaphore modules.
- Solved any Combination Lock modules.
- Solved any Simon Says modules.
- Solved any Astrology modules.
- Solved any Switches modules.
- Solved any Plumbing modules.

On the Subject of Chord Qualities

They say that anything goes in jazz, but I didn't know that that includes long boring tables!

See the next page for chord quality lookup.



1. This module consists of a wheel with twelve notes on it, ordered chromatically.
2. Four of those notes are selected with a triangle pointing towards them. These notes make up the given chord.
3. Every chord consists of two parts: The root and the quality. For example, the root of the chord C-7 is the note C, and the quality is '-7'. Use the table on the next page (or music theory knowledge) to determine the root and quality of the given chord.
4. Look up the root and quality of the answer chord in the tables below using the given chord's quality and root respectively.
5. Reverse the process in step #3 to find the notes of the answer chord, and select the notes of the answer chord by rotating the wheel and pressing the button labeled ♦.
6. Press the other button to submit the answer chord. There is only one correct answer.

Root to Quality	
A	-△7♯5
A♯	△7♯5
B	-7
C	∅
C♯	-add9
D	△7
D♯	7♯9
E	7sus
F	add9
F♯	7
G	-△7
G♯	7♯5

Quality to Root	
7	G
-7	G♯
△7	A♯
-△7	F
7♯9	A
∅	C♯
add9	D♯
-add9	E
7♯5	F♯
△7♯5	C
7sus	D
-△7♯5	B

Chord Quality Lookup Table

Use the following table to look up which notes are in a chord of a particular quality. Each note in the chord is represented by an \times in the row of its interval. The offset from the root (in semitones) of each row is provided in the left-most column. Note that an offset of +12 is the same as an offset of +0.

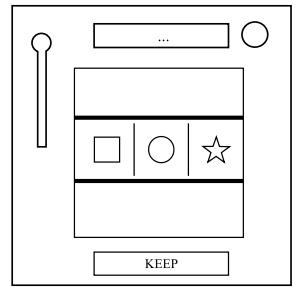
Off	7	-7	$\Delta 7$	$-\Delta 7$	$7\#9$	\emptyset	add9	-add9	$7\#5$	$\Delta 7\#5$	$7sus$	$-\Delta 7\#5$
+0	\times	\times	\times	\times	\times	\times	\times	\times	\times	\times	\times	\times
+1												
+2							\times	\times				
+3		\times		\times	\times	\times		\times				\times
+4	\times		\times		\times		\times		\times	\times		
+5												\times
+6						\times						
+7	\times	\times	\times	\times	*		\times	\times			\times	
+8									\times	\times		\times
+9												
+10	\times	\times			\times	\times			\times		\times	
+11			\times	\times						\times		\times

*Omit the 5th of this chord

On the Subject of Silly Slots

Sassy Sally said sorry since soggy Steven slurped soup.

Only press the KEEP button when the slots are in a **LEGAL** state. Only pull the lever when the slots are in an **ILLEGAL** state. The module will automatically defuse after 4 pulls of the lever.



The slots are in an **ILLEGAL** state if any of these statements are true:

- There is a single Silly Sausage.
- There is a single Sassy Sally, unless the slot in the same position 2 stages ago was Soggy.
- There are 2 or more Soggy Stevens.
- There are 3 Simons, unless any of them are Sassy.
- There is a Sausage adjacent to a Sally, unless every adjacent Sally is Soggy.
- There are exactly 2 Silly slots, unless they are both Steven.
- There is a single Soggy slot, unless the previous stage had any number of Sausage slots.
- All 3 slots are the same symbol and colour, unless there has been a Soggy Sausage in any previous stage.
- All 3 slots are the same colour, unless any of them are Sally or there was a Silly Steven in the last stage.
- There are any number of Silly Simons, unless there has been a Sassy Sausage in any previous stage.

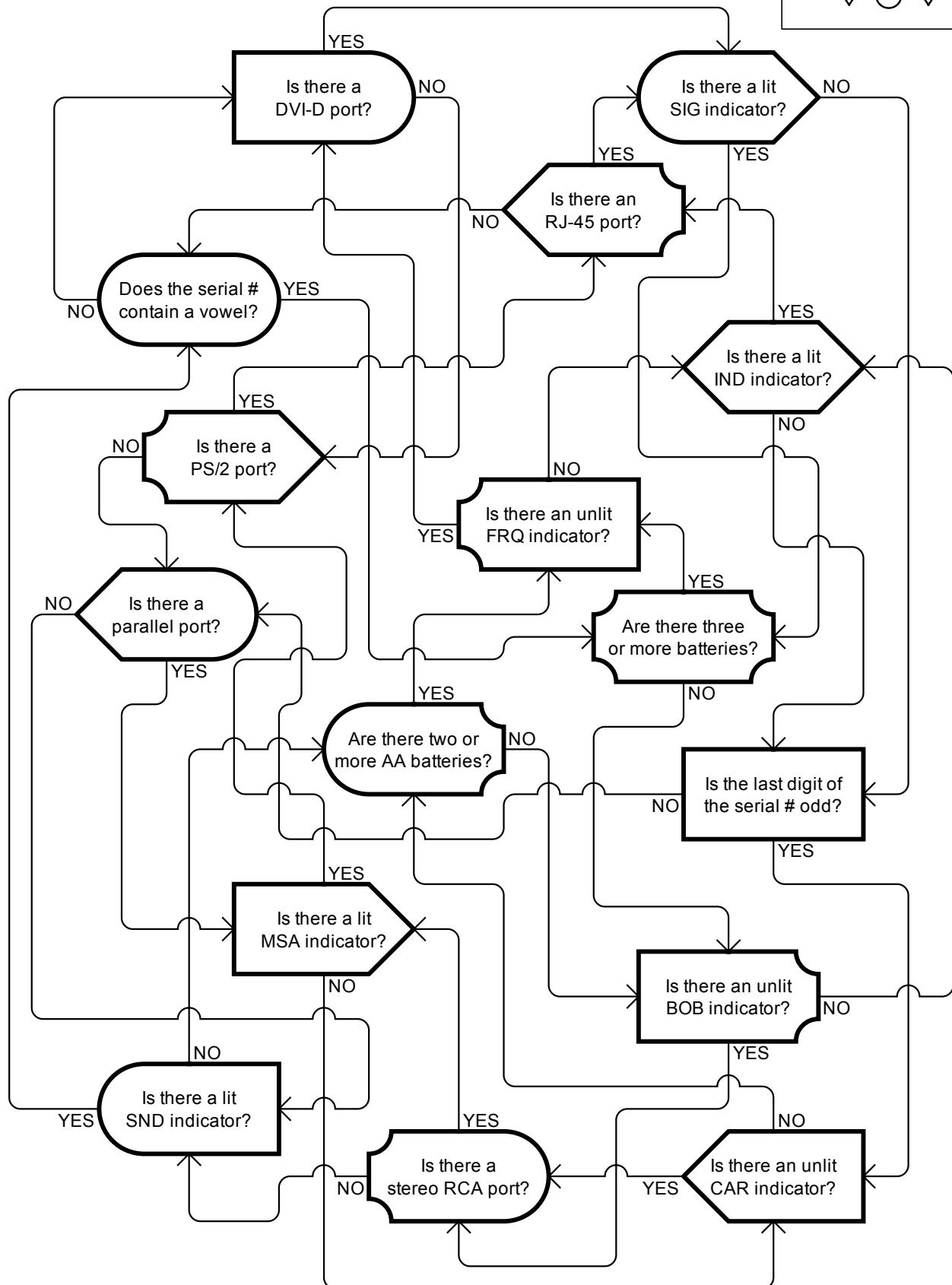
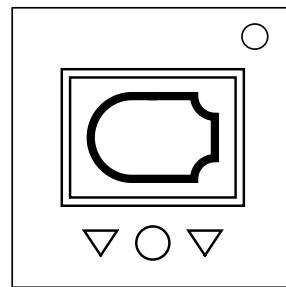
UNDERLINED words are placeholders, substitute them for the correct word using the matrix below and the keyword found on the module's display. This keyword changes when the lever is pulled.

		Placeholder						
		Sassy	Silly	Soggy	Sally	Simon	Sausage	Steven
Key Word	Sassy	Blue	Red	Green	Cherry	Grape	Bomb	Coin
	Silly	Blue	Green	Red	Coin	Bomb	Grape	Cherry
	Soggy	Green	Blue	Red	Coin	Cherry	Bomb	Grape
	Sally	Red	Blue	Green	Grape	Cherry	Bomb	Coin
	Simon	Red	Green	Blue	Bomb	Grape	Cherry	Coin
	Sausage	Red	Blue	Green	Grape	Bomb	Coin	Cherry
	Steven	Green	Red	Blue	Cherry	Bomb	Coin	Grape

On the Subject of Shape Shift

The concept is simple: change a shape into another shape according to certain rules. The rules, however, are not so simple.

Starting at the shape displayed on the module, follow the flowchart and submit the first shape which is visited twice.



On the Subject of Cruel Piano Keys

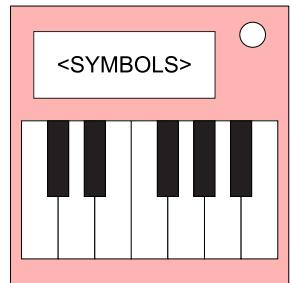
The devil's interval approaches...

See Appendix A for indicator identification reference.

See Appendix B for battery identification reference.

See Appendix C for port identification reference.

See the third page for serialism & music terminology reference.



- A cruel piano keys module will present with 4 musical symbols in the top indicator and a 12-note keyboard to input with.
- Each rule consists of one or more required symbol(s) and optional further requirements based on the bomb casing.
- Follow the list of rules down in **Table 2** until one matches the criteria for the module and bomb.
- Then use the lookup criteria to find the prime 12-tone row from **Table 1**.
- Then apply the according transformation from **Table 2** to the 12-tone row, and execute this final sequence.
- A failed attempt will require re-entry of the entire note sequence.

Table 1.

#	Prime 12-tone Sequence	#	Prime 12-tone Sequence
0	F D F# G# C B A# C# G E D# A	5	C D# F# D F C# B A G A# E G#
1	A# A C E C# D D# G B F# G# F	6	G# C A# C# E G B D# A D F F#
2	F# B A G# D C G C# F D# E A#	7	E A C# B G G# A# D# F# F C D
3	E D# D F# F A# G# C# C B G A	8	G# D# D E A# C# F# G F A C B
4	D E A A# C B C# G# F F# D# G	9	D# G# C B D C# F# A# F G A E

Table 2.

<u>Required Symbol(s)</u>	<u>Further Requirements</u>	<u>Lookup Index</u>	<u>Transformation</u>
or ~	2 or more indicators (lit or unlit)	Left-most digit in serial number	RI
# or x	An empty port plate	Number of battery holders*	P, transpose down by 'x' semitones, where 'x' = number of minutes remaining
□ or ▨	2 or more of a certain type of port	Least significant digit of number of completed modules	I
or ▷	2 or more port plates	9 minus the number of unlit indicators†	R
¢ or C	Serial contains 1 or more vowels	Least significant digit of number of strikes	R, transpose down by 3 semitones
¤ or ▲	Even number of batteries	DVI-D present: 7 Otherwise: 3	P, transpose up by 'x' semitones, where 'x' = number of ports‡
♪ or {	An indicator with no vowels in the label	8	I
□ or ▷	Less than 2 ports‡	4	R
or x	(No other requirements)	5	P

If none of these rules apply, revert back to the Normal Piano Keys ruleset and play the given note sequence normally.

Notes:

*: If the number of battery holders exceeds 9, continually subtract 10 until you have a result in the 0 to 9 range (inclusive).

†: If the result is negative, continually add 10 until you have a result in the 0 to 9 range (inclusive).

‡: The Stereo RCA port does not count as 2 separate ports; the Red & White connectors are part of the same singular port.

Serialism & Music Terminology

To clarify, the note below a C would be a B, and similarly, the note after a B would be a C. The 12 tones on the piano essentially wrap around.

The Prime sequence (or 'P' for short), is the original or base form of the 12-tone row. No transformation takes place.

The Retrograde sequence (or 'R' for short), takes the Prime sequence, but executes it in reverse order. For example, the Retrograde of the Prime row A B C D E would be E D C B A.

The Inverse sequence (or 'I' for short), takes the Prime sequence, but the intervals between the notes are inverted. For example, take the interval from A to B; the interval is +2 semitones, as it takes you 2 semitones to get from A to B (A goes to A[#] then B). The inversion of this interval would be -2 semitones. Therefore, the inverted sequence would be A then G, as G is -2 semitones away from A (A goes to G[#] then G).

As an extended example, the Inversion of the Prime row A B C D E would be A G F[#] E D; the first note always remains the same, and all the other notes get inverted relative to that note.

The Retrograde Inverse sequence (or 'RI' for short), takes the Inverse sequence in Retrograde. For example, the Retrograde Inverse of the Prime row A B C D E would take the Inverse first (which is A G F[#] E D), and then the Retrograde of this Inverse would be D E F[#] G A.

Transpositions apply a translation of the tone row up or down by a given number of semitones. For example, the Prime row A B C D E transposed up by 1 semitone would be A[#] C C[#] D[#] F.

An Interval is the tonal distance between two distinct notes and is usually measured in semitones. For example, the interval from G to B is up 4 semitones.

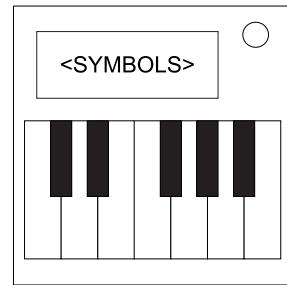
On the Subject of Festive Piano Keys

Let's all gather round for a family sing-a-long!

See Appendix A for indicator identification reference.

See Appendix B for battery identification reference.

See Appendix C for port identification reference.



- A festive piano keys module will present with 3 musical symbols in the top indicator and a 12-note keyboard to input with; This will be different to the regular piano keys module by a different backing color.
- Each rule consists of one or more required symbol(s) and optional further requirements based on the bomb casing.
- Follow the list of rules down until one matches the criteria for the module; then execute the sequence of notes listed.
- A failed attempt will require re-entry of the entire note sequence.

<u>Required Symbol(s)</u>	<u>Further Requirements</u>	<u>Note Sequence</u>
//	More even digits in the serial number than odd	E♭ F E♭ C A♭ F E♭
\$ or ♫	Any duplicate characters or digits in serial number	C♯ B A F♯ G♯ A G♯ F♯
** and *	(No other requirements)	G A G E G A G E
▼ or □	At most 2 types of port	E♭ E♭ D♭ A♭ E♭ E♭ F D♭
^	Lit indicator with vowel	B A G E♭ D A B A G
♪ or ♪	3 or more AA batteries	F♯ G A A D B A G E D
○ and ▷	(No other requirements)	G E F G C B C D C B A G
> or ^ or ▼	Serial number contains 1 or 9	G G G G G G G B♭ E♭ F G
\$ or ♫ or //	(No other requirements)	D D D C♯ C♯ C♯ B C♯ B F♯
(No requirement)	(No other requirements)	B♭ A B♭ G (Play sequence <u>x</u> times, where <u>x</u> equals largest digit in serial + 1)

On the Subject of Piano Keys

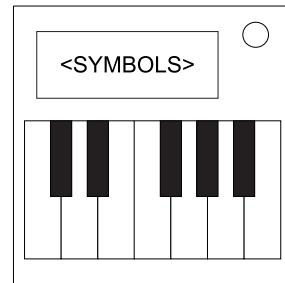
What do you get when you drop a piano down a mine shaft? A flat minor.

See Appendix A for indicator identification reference.

See Appendix B for battery identification reference.

See Appendix C for port identification reference.

See the next page for piano/keyboard reference.

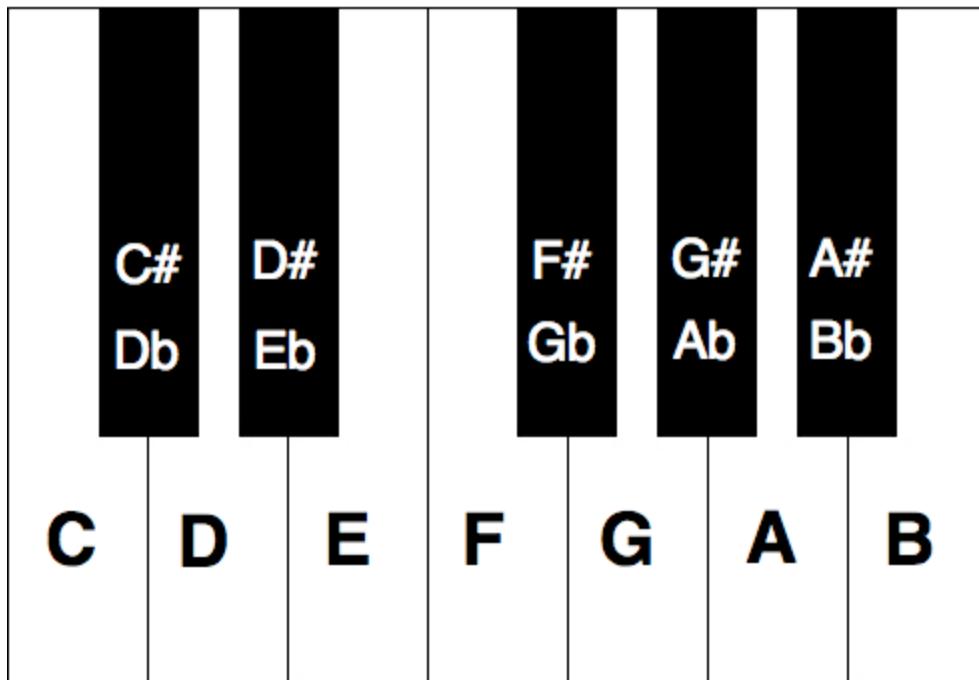


- A piano keys module will present with 3 musical symbols in the top indicator and a 12-note keyboard to input with.
- Each rule consists of one or more required symbol(s) and optional further requirements based on the bomb casing.
- Follow the list of rules down until one matches the criteria for the module; then execute the sequence of notes listed.
- A failed attempt will require re-entry of the entire note sequence.

<u>Required Symbol(s)</u>	<u>Further Requirements</u>	<u>Note Sequence</u>
♭	Last digit of serial number is even	B♭ B♭ B♭ B♭ G♭ A♭ B♭ A♭ B♭
C or #	2 or more battery holders	E♭ E♭ D D E♭ E♭ D E♭ E♭ D D E♭
♯ and ⊖	(No other requirements)	E F♯ F♯ F♯ F♯ E E E
₵ or ~	RCA port is present	B♭ A B♭ F E♭ B♭ A B♭ F E♭
ʒ	SND indicator is present and lit	E E E C E G G
~~ or ⊖ or C	3 or more batteries	C♯ D E F C♯ D E F B♭ A
♭ and #	(No other requirements)	G G C G G C G C
₵ or ~~	Serial number contains a 3, 7 or 8	A E F G F E D D F A
♯ or ~ or ʒ	(No other requirements)	G G G E♭ B♭ G E♭ B♭ G
(No requirement)	(No other requirements)	B D A G A B D A

Piano/Keyboard Reference

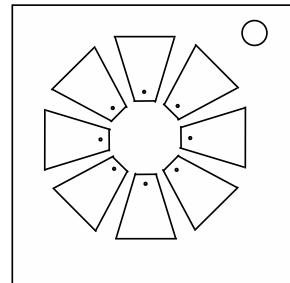
Use the following graphic as a reference to how tones are mapped onto a standard 12-note piano/keyboard.



On the Subject of Round Keypads

I think someone tried to make this module look really cool, but failed.

- The circular keypad contains 8 symbols from the columns below.
- Find the column below that contains the most symbols from the keypad.
- If two or more columns have the most symbols, use the right-most column.
- Press all buttons that have a symbol not present on the correct column.

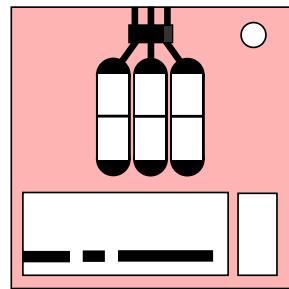


Q	Ё	©	б	Ψ	б
À	Ӯ	ӭ	Ҕ	Ҏ	Ӯ
Ӷ	҆	Ҋ	Җ	Ҏ	Ӷ
ӵ	Ҋ	҈	Җ	Ҏ	ӵ
Ғ	★	҃	Җ	Ҏ	Ӵ
ӷ	ӷ	Ӷ	Ӹ	Ҏ	Ӵ
Ҋ	Ҋ	Ҋ	Ӹ	★	ӷ
҆	Ҋ	★	Ҋ	★	ӷ

On the Subject of Morseomatics

Get it? Because it uses morse and maths! I'll see myself out...

- Every letter of the alphabet is considered to have numeric value equal to its position (A=1, B=2 ... Z=26)
- Numeric values outside the 1-26 range wrap around ($Z+1=A$, $26+1=1$)
- Three unique letters are being received on a loop, shown by the three flashing lights in the middle of the module
- To solve the module, a correct response letter must be sent in morse using the transmit button in the bottom-right
- The small switch at the top can be used to toggle the received letter lights



Transmitted morse is interpreted based on gaps between button holds.

Holding for more than double the length of the average gap is considered to be a dash, and anything shorter is considered a dot.

When transmitting, E and T are considered equal, as they are indistinguishable.

Take the 4th and 5th character of the serial number, this is your character pair.

Perform each step below in sequence, modifying your character pair progressively:

- For each indicator that has a matching letter in the received letters; add 1 to the first character of your pair if the indicator is on, or the second character if it is off
- If the sum of your character pair is a square number, add 4 to the first character; otherwise, subtract 4 from the second character
- Add the largest received letter to the first character in your pair
- If any received letters are prime, subtract them from the first character in your pair
- If any received letters are square, subtract them from the second character in your pair
- If batteries are present and any received letters are divisible by the number of batteries present, subtract those received letters from both characters in your pair

After performing all steps, perform whatever rule applies below:

- Characters are equal: Transmit the first character
- First character larger: Transmit the difference of the two characters
- Second character larger: Transmit the sum of the two characters

How to Interpret

1. A short flash represents a dot.
2. A long flash represents a dash.
3. There is a long gap between letters.
4. There is a very long gap before the word repeats.

A ● -
 B - - . . .
 C - - - .
 D - - . .
 E ●
 F . . - - .
 G - - - - .
 H
 I . .
 J ● - - - -
 K - - . - -
 L . - - . .
 M - - -
 N - - .
 O - - - -
 P . - - - .
 Q - - - - . -
 R . - - . .
 S
 T - -

U ● . . -
 V ● . . - -
 W ● - - -
 X - - . . -
 Y - - . - -
 Z - - - - . .

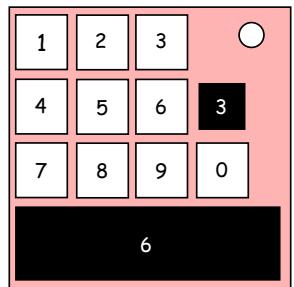
1 ● - - - - -
 2 ● . - - - -
 3 ● . . - - -
 4 ● . . . - -
 5 ● -
 6 - -
 7 - - - - . .
 8 - - - - . . .
 9 - - - - - .
 0 - - - - - -

A	1
B	2
C	3
D	4
E	5
F	6
G	7
H	8
I	9
J	10
K	11
L	12
M	13
N	14
O	15
P	16
Q	17
R	18
S	19
T	20
U	21
V	22
W	23
X	24
Y	25
Z	26

On the Subject of Forget Me Not

This one likes attention, but not too much attention.

- The main display will update on each solved module*. The current display stage is shown on the smaller display.
- Add the displayed number to the corresponding number gained from the chart below, and record the least significant digit from the total. This is the calculated number for that stage.
- When all other modules* have been completed, the display will turn blank.
- Press the calculated numbers on the keypad in the order they were obtained.
- If an incorrect calculated number is entered, an LED will indicate what number was displayed.



First number:

- If the bomb has an unlit CAR indicator, the number is 2.
- Otherwise, if the bomb has more unlit indicators than lit indicators, the number is 7.
- Otherwise, if the bomb has no unlit indicators, the number is the amount of lit indicators.
- Otherwise, the number is the last digit of the serial.

Second number:

- If the bomb has a serial port and 3 or more digits in the serial, the number is 3.
- Otherwise, if the previous calculated number was even, the number is the previous calculated number plus 1.
- Otherwise, the number is the previous calculated number minus 1.

All other numbers:

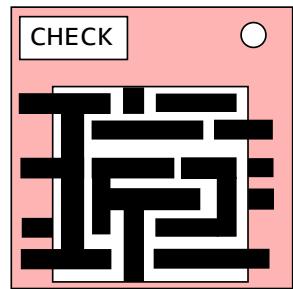
- If either of the previous two calculated numbers were 0, the number is the largest digit in the serial.
- Otherwise, if both of the previous two calculated numbers were even, the number is the smallest odd digit in the serial, or 9 if no such digit exists.
- Otherwise, the number is the most significant digit of the sum of the previous two calculated numbers.

*Some modules are ignored by Forget Me Not modules.

On the Subject of Plumbing

I'd wash your hands after this one...

- The module has 4 input pipes (left) and 4 output pipes (right). At least one input pipe and one output pipe will be active.
- The defuser must connect all active input pipes to all active output pipes, whilst taking care not to connect inactive pipes, using the 6 by 6 grid of pipes. Clicking on a pipe in the 6 by 6 grid will rotate it.
- All pipes connected to an active pipe must also correctly connect to other pipes. Any pipe with a connection not going into another pipe (or going into an inactive in/out pipe) will cause a strike upon checking the solution.
- Once the solution has been entered, press "CHECK" to verify the solution. An incorrect solution will cause a strike.
- Active input and output pipes are determined using the table below. If the pipe has more points for it than against, it is active.

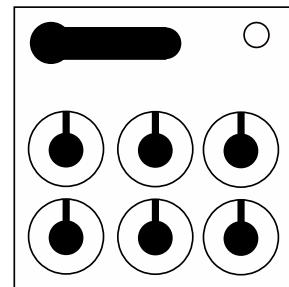


Red Input	Yellow Input
<ul style="list-style-type: none"> • For: Serial contains a '1' • For: Exactly 1 RJ45 port • Against: Any duplicate ports • Against: Any duplicate serial characters 	<ul style="list-style-type: none"> • For: Serial contains a '2' • For: One or more Stereo RCA ports • Against: No duplicate ports • Against: Serial contains a '1' or 'L'
Green Input	Blue Input
<ul style="list-style-type: none"> • For: Serial contains 3 or more numbers • For: One or more DVI-D ports • Against: Red Input is inactive • Against: Yellow Input is inactive 	<ul style="list-style-type: none"> • Note: Always active if all other inputs are inactive • For: At least 4 port types • For: At least 4 batteries • Against: No ports • Against: No batteries
Red Output	Yellow Output
<ul style="list-style-type: none"> • For: One or more Serial ports • For: Exactly one battery • Against: Serial contains more than 2 numbers • Against: More than 2 inputs are active 	<ul style="list-style-type: none"> • For: Any duplicate ports • For: Serial contains a '4' or '8' • Against: Serial doesn't contain a '2' • Against: Green Input is active
Green Output	Blue Output
<ul style="list-style-type: none"> • For: Exactly 3 inputs are active • For: Exactly 3 ports are present • Against: Less than 3 ports are present • Against: Serial contains more than 3 numbers 	<ul style="list-style-type: none"> • Note: Always active if all other outputs are inactive • For: All inputs are active • For: Any other output is inactive • Against: Less than 2 batteries • Against: No Parallel port

On the Subject of the Safety Safe

This safe either contains immense riches, or is empty.

- All 6 dials must be oriented correctly to solve the module.
- Each dial has a tell, where it clicks louder. This is the starting location for each dial.
- Follow the rules below to determine how far to rotate each dial after the starting location.
- Turn the lever to check the solution. Any correct dials are indicated with a green light, and any incorrect dials are indicated with a red light.
- Starting at 0, add the number of port types on the bomb, multiplied by 7.
- Add the number of lit indicators with a matching letter in the serial, multiplied by 5.
- Add the number of unlit indicators with a matching letter in the serial.
- For the first five dials, add the number obtained from the table on the next page, using both the location of the dial and the serial number as reference.
- For the last dial, add the sum of the numbers in the last column using all characters in the serial number as a reference.
- Note: A full rotation takes 12 turns.

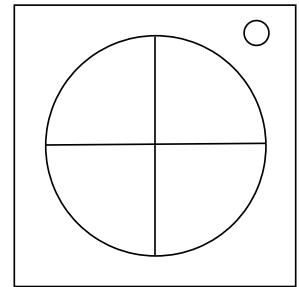


Dial					
Top			Bottom		
Left	Middle	Right	Left	Middle	Right
Serial					
First	Second	Third	Fourth	Fifth	All
A	8	3	4	8	9
B	10	1	3	7	3
C	2	1	1	5	3
D	11	6	11	11	7
E	0	5	5	8	2
F	4	2	7	7	1
G	7	4	4	2	10
H	8	3	6	6	6
I	0	11	0	0	9
J	2	11	8	0	5
K	5	2	5	1	0
L	1	9	8	11	11
M	1	7	9	5	6
N	9	5	1	4	4
O	5	9	8	10	2
P	3	10	9	1	9
Q	4	10	6	1	4
R	8	0	4	0	6
S	9	4	0	6	3
T	7	6	7	11	5
U	11	9	6	3	11
V	11	11	2	8	1
W	6	0	11	6	11
X	4	2	7	2	8
Y	10	7	10	10	8
Z	3	7	1	10	0
0	7	0	3	5	8
1	9	10	10	9	1
2	2	5	11	7	7
3	10	8	10	4	10
4	6	8	0	3	5
5	6	3	3	3	0
6	1	1	5	2	7
7	0	6	2	4	2
8	5	4	9	9	10
9	3	8	2	9	4
					9

On the Subject of Simon States

I'm not sure this even qualifies as Simon Says...

- One or more colours will flash per stage.
- Each stage will also show the colours of previous stages.
- The current sequence will repeat after a short delay.
- When the sequence repeats, your input is not reset.
- If you press an incorrect button, your input is reset.
- Using the table on the next page, press the correct colour for each stage to advance.
- When a rule asks for colour priorities, use the table below to determine the correct colour.



Priority	Top-Left Button Colour			
	Red	Yellow	Green	Blue
Highest	Red	Blue	Green	Yellow
High	Blue	Yellow	Red	Green
Low	Green	Red	Yellow	Blue
Lowest	Yellow	Green	Blue	Red

Stage 1

- If one colour flashed, press that colour.
- Otherwise, if two colours flashed and one was blue, press the highest priority colour that flashed.
- Otherwise, if two colours flashed, press blue.
- Otherwise, if three colours flashed including red, press the lowest priority colour that flashed.
- Otherwise, if three colours flashed, press red.
- Otherwise, press the second highest priority colour.

Stage 2

- If only red and blue flashed, press the highest priority colour that didn't flash.
- Otherwise, if two colours flashed, press the lowest priority colour that didn't flash.
- Otherwise, if one colour flashed and it was not blue, press blue.
- Otherwise, if one colour flashed, press yellow.
- Otherwise, if all colours flashed, press the same colour as stage 1.
- Otherwise, press the colour that didn't flash.

Stage 3

- If three colours flashed and at least one was pressed in a previous stage, press the highest priority colour that flashed and hasn't been pressed.
- Otherwise, if three colours flashed, press the highest priority colour that flashed.
- Otherwise, if two colours flashed and both have been pressed, press the lowest priority colour that didn't flash.
- Otherwise, if two colours flashed, press the same colour as stage 1.
- Otherwise, if one colour flashed, press that colour.
- Otherwise, press the second lowest priority colour.

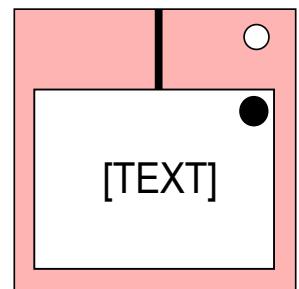
Stage 4

- If three unique colours have been pressed, press the fourth colour.
- Otherwise, if three colours flashed and exactly one hasn't been pressed, press that colour.
- Otherwise, if at least three colours flashed, press the lowest priority colour.
- Otherwise, if one colour flashed, press that colour.
- Otherwise, press green.

On the Subject of The Square Button

This may look like the button you know and love, but don't be fooled! It's a brilliantly disguised imposter foiled only by a single mistake: It's the wrong shape.

Follow these rules in the order they are listed. Perform the first action that applies:



1. If the button is blue and the number of AA batteries is larger than the number of D batteries, hold the button and refer to "Releasing a Held Button".
2. If the button is yellow or blue and has as at least as many letters on the label as the highest number in the serial, press and immediately release.
3. If the button is yellow or blue and the label states a colour, hold the button and refer to "Releasing a Held Button".
4. If the button has no label, press and immediately release when the two seconds digits on the timer match.
5. If the button is not dark grey and the number of letters on the label is larger than the number of lit indicators, press and immediately release.
6. If there are at least 2 unlit indicators and the serial contains a vowel, press and immediately release.
7. If no other rule applies, hold the button and refer to "Releasing a Held Button".

Releasing a Held Button

If you start holding the button down, a coloured LED will light up on the right side of the button case. Based on its colour, follow the rules below:

- Cyan: Release when the two seconds digits add up to 7.
- Orange: Release when the two seconds digits add up to 3 or 13.
- Other: Release when the two seconds digits add up to 5.

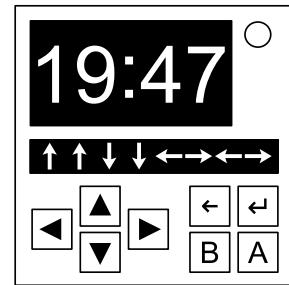
If the LED is flickering, follow these rules instead:

- Cyan: Release when the number of seconds remaining is a multiple of 7.
- Orange: Release when the number of seconds displayed is either prime or 0.
- Other: Release one second after the two seconds digits add up to a multiple of 4.

On the Subject of the Gamepad

Oh, the layout of the buttons on this thing takes me back to my childhood! Except I didn't expect to see that on a time bomb, even. Play time is over, I suppose.

See Appendix MathConcepts: Mathematical Concepts for more information.



- Two 2-digit numbers will appear on the top LCD display.
- The bottom has eight keys: the input keys ($\blacktriangleleft\blacktriangleright\blacktriangledown\blacktriangledown$ AB), Return, and Backspace.
- Determine the correct command, made of two subcommands, to input, depending on the properties of the two numbers. Use the first match.
- The two numbers are notated x and y . Individual digits are notated as $abcd$. A number followed by n means a multiple of that number.

Global Overrides	
Apply all matches after determining the two commands.	<ul style="list-style-type: none"> If $x = 11n$, switch the first keypress with the second, and the fifth with the seventh. If $a = 1 + d$, switch the third and fourth keypresses, as well as the sixth and eighth. If x or y is a highly composite number, switch the order of the subcommands. If x and y are perfect squares, flip the entire sequence.

First Subcommand	Second Subcommand
x is prime	$\blacktriangle\blacktriangle\blacktriangledown\blacktriangledown$
$x = 12n$	$\blacktriangle A \blacktriangleleft\blacktriangleleft$
$a+b = 10$ AND last digit of serial number is odd	$AB \blacktriangle\blacktriangle$
$x = 6n + 3$ OR $x = 10n + 5$	$\blacktriangledown\blacktriangleleft A \blacktriangleright$
$x = 7n$ AND $y \neq 7n$	$\blacktriangleleft\blacktriangleleft A B$
$x = c \times d$	$A\blacktriangle\blacktriangleleft\blacktriangleleft$
x is a perfect square	$\blacktriangleright\blacktriangleright A \blacktriangledown$
$x = 3n - 1$ OR bomb has unlit ind. labeled SND	$\blacktriangleright A B A$
$60 \leq x < 90$ AND bomb has no batteries	$BB \blacktriangleright\blacktriangleleft$
$x = 6n$	$ABA \blacktriangleright$
$x = 4n$	$\blacktriangledown\blacktriangledown\blacktriangleleft\blacktriangleleft$
else	$A\blacktriangleleft B \blacktriangleright$

Appendix MathConcepts: Mathematical Concepts

This appendix contains a brief overview of some mathematical concepts used in the Gamepad module.

Prime Numbers

A prime number is a counting number (positive whole number) that can only be divided by 1 and itself. In other words, there is no way to share a prime number of donuts equally among any number of friends (unless you have as many friends as donuts!).

The prime numbers below 100 are: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.

Perfect Squares

A perfect square is any whole number multiplied by itself.

The perfect squares below 100 are: 1, 4, 9, 16, 25, 36, 49, 64, 81.

Highly Composite Numbers

A highly composite number (HCN) has more divisors than any smaller positive integer. For example, 6 can be divided by 1, 2, 3, and 6, which is more than the last HCN, 4, which has 1, 2, and 4. 8 can be divided by 1, 2, 4, and 8, but a smaller number (6) has an equal number of divisors, so it is not a HCN.

The highly composite numbers below 100 are: 1, 2, 4, 6, 12, 24, 36, 48, 60.

On the Subject of Foreign Exchange Rates

If bombs were stock brokers...

Defusing this module requires the expert to have a device that can connect to the World Wide Web.

G	B	P
U	S	D
1	2	3

This module has the ability to connect to the internet and query the state of foreign exchange rates. There should be a three times three grid of keys, each with a light emitting diode. DO NOT PRESS ANY KEY ON THIS MODULE WHILE THE LIGHT EMITTING DIODES ARE FLASHING IN SEQUENCE.

The keys are grouped by rows:

Top row: ISO 4217 alphabetic code for the base currency.[1][2]

Middle row: ISO 4217 alphabetic code for the target currency.[1][2]

Bottom row: Value of currency to convert.

All light emitting diodes have turned green:

Enter the following uniform resource locator into your internet capable device:

<http://api.fixer.io/latest?base=XXX&symbols=YYY>

Replace XXX with the ISO 4217 alphabetic code for the base currency.

Replace YYY with the ISO 4217 alphabetic code for the target currency.

You will receive data in a Javascript object notation format, look for {"YYY": NUMBER}, where NUMBER will be the exchange rate. Using the exchange rate, convert the number in the bottom row to the target currency, round that number down and take note of the 2nd digit from the left[4]. Press the Nth key where N is the noted number (count keys from left to right, top to bottom)[5].

All light emitting diodes have turned red:

In this case the module failed to query today's currency rates. Get the ISO 4217 numeric code for the target currency's country and take note the 2nd digit from the right. Press the Nth key where N is the noted number (count keys from left to right, top to bottom)[5].

[1]: If there is more than one battery on the bomb, the base currency code and target currency code is swapped.

[2]: This may instead be the ISO 4217 numeric code.

[3]: Note the currency rates are updated around 4PM CET.

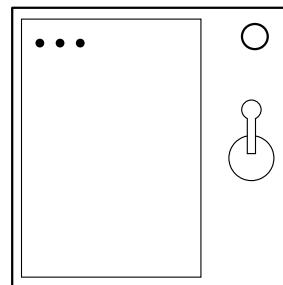
[4]: In the case the converted currency is less than 10, the noted number is 0.

[5]: In the case the noted number is 0, press the top left key.

On the Subject of Crazy Talk

Nothing. Literally nothing. Blank. Nada.

1. Text will appear on a display.
2. Find the exact match and the action in the table below.
3. Flip the switch down when the bomb timer has the number before the forward slash in the seconds column.
4. Flip the switch back up when the bomb timer has the number after the forward slash in the seconds column.



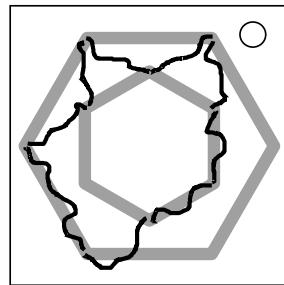
Display	Action	Display	Action
← → ← → →	5/4	NO REALLY.	5/2
1 3 2 4	3/2	← LEFT → LEFT → RIGHT	5/6
LEFT ARROW LEFT WORD RIGHT ARROW LEFT WORD RIGHT ARROW RIGHT WORD	5/8	ONE AND THEN 3 TO 4	4/7
BLANK	1/3	STOP TWICE	7/6
LITERALLY BLANK	1/5	LEFT	6/9
FOR THE LOVE OF ALL THAT IS GOOD AND HOLY PLEASE FULLSTOP FULLSTOP.	9/0	..	8/5
AN ACTUAL LEFT ARROW LITERAL PHRASE	5/3	PERIOD PERIOD	8/2
FOR THE LOVE OF - THE DISPLAY JUST CHANGED, I DIDN'T KNOW THIS MOD COULD DO THAT. DOES IT MENTION THAT IN THE MANUAL?	8/7	THERE ARE THREE WORDS NO PUNCTUATION READY? STOP DOT PERIOD	5/0
ALL WORDS ONE THREE TO FOR FOR AS IN THIS IS FOR YOU	4/0	NOVEMBER OSCAR SPACE, LIMA INDIGO TANGO ECHO ROMEO ALPHA LIMA LIMA YANKEE SPACE NOVEMBER OSCAR TANGO HOTEL INDEGO NOVEMBER GOLF	2/9
LITERALLY NOTHING	1/4	FIVE WORDS THREE WORDS THE PUNCTUATION FULLSTOP	1/9
NO, LITERALLY NOTHING	2/5	THE PHRASE: THE PUNCTUATION FULLSTOP	9/3
THE WORD LEFT	7/0	EMPTY SPACE	1/6
HOLD ON IT'S BLANK	1/9	ONE THREE TWO FOUR	3/7
SEVEN WORDS FIVE WORDS THREE WORDS THE PUNCTUATION FULLSTOP	0/5	IT'S SHOWING NOTHING	2/3
THE PHRASE THE WORD STOP TWICE	9/1	LIMA ECHO FOXTROT TANGO SPACE ALPHA ROMEO ROMEO OSCAR RISKY SPACE SIERRA YANKEE MIKE BRAVO OSCAR LIMA	1/2
THE FOLLOWING SENTENCE THE WORD NOTHING	2/7	ONE 3 2 4	3/4
ONE THREE TO FOR	3/9	STOP.	7/4
THREE WORDS THE WORD STOP	7/3	.PERIOD	8/1
DISREGARD WHAT I JUST SAID. FOUR WORDS, NO PUNCTUATION. ONE THREE 2 4.	3/1	NO REALLY STOP	5/1
1 3 2 FOR	1/0	1 3 TOO 4	2/0
DISREGARD WHAT I JUST SAID. TWO WORDS THEN TWO DIGITS. ONE THREE 2 4.	0/8	PERIOD TWICE	8/3
WE JUST BLEW UP	4/2		

Display	Action	Display	Action
1 3 TOO WITH 2 OHS FOUR	4/2	THIS ONE IS ALL ARROW SYMBOLS NO WORDS	2/8
1 3 TO 4	3/0	←	6/3
STOP DOT PERIOD	5/0	THE WORD STOP TWICE	9/4
LEFT LEFT RIGHT LEFT RIGHT RIGHT	6/7	← ← RIGHT LEFT → →	6/1
IT LITERALLY SAYS THE WORD ONE AND THEN THE NUMBERS 2 3 4	4/5	THE PUNCTUATION FULLSTOP	9/2
ONE IN LETTERS 3 2 4 IN NUMBERS	3/5	1 3 TOO WITH TWO OS 4	4/1
WAIT FORGET EVERYTHING I JUST SAID, TWO WORDS THEN TWO SYMBOLS THEN TWO WORDS: ← ← RIGHT LEFT → →	1/6	THREE WORDS THE PUNCTUATION FULLSTOP	9/9
1 THREE TWO FOUR	3/6	OK WORD FOR WORD LEFT ARROW SYMBOL TWICE THEN THE WORDS RIGHT LEFT RIGHT THEN A RIGHT ARROW SYMBOL	6/0
PERIOD	7/9	DOT DOT	8/6
.STOP	7/8	LEFT ARROW	6/8
NOVEBMER OSCAR SPACE, LIMA INDIA TANGO ECHO ROMEO ALPHA LIMA LIMA YANKEE SPACE NOVEMBER OSCAR TANGO HOTEL INDIA NOVEMBER GOLF	0/7	AFTER I SAY BEEP FIND THIS PHRASE WORD FOR WORD BEEP AN ACTUAL LEFT ARROW	7/2
LIMA ECHO FOXTROT TANGO SPACE ALPHA ROMEO ROMEO OSCAR WHISKEY SPACE SIERRA YANKEE MIKE BRAVO OSCAR LIMA	6/5	ONE THREE 2 WITH TWO OHS 4	4/3
NOTHING	1/2	LEFT ARROW SYMBOL	6/4
THERE'S NOTHING	1/8	AN ACTUAL LEFT ARROW	6/2
STOP STOP	7/5	THAT'S WHAT IT'S SHOWING	2/1
RIGHT ALL IN WORDS STARTING NOW ONE TWO THREE FOUR	4/9	THE PHRASE THE WORD NOTHING	2/6
THE PHRASE THE WORD LEFT	7/1	THE WORD ONE AND THEN THE NUMBERS 3 2 4	4/8
LEFT ARROW SYMBOL TWICE THEN THE WORDS RIGHT LEFT RIGHT THEN A RIGHT ARROW SYMBOL	5/9	ONE 3 2 FOUR	3/8
LEFT LEFT RIGHT ← RIGHT →	5/7	ONE WORD THEN PUNCTUATION. STOP STOP.	0/9
NO COMMA LITERALLY NOTHING	2/4	THE WORD BLANK	0/1
HOLD ON CRAZY TALK WHILE I DO THIS NEEDY	2/1	FULLSTOP FULLSTOP	8/4

On the Subject of Follow the Leader

Child's play. Just follow the leader. Only if you fail to follow, the penalty is somewhat more explosive.

This module contains 8-12 wires connecting numerically labeled plugs in a looping sequence. Each wire leads from one plug to the next plug that contains a wire in ascending numerical order. A wire leading from plug 1 is considered to be "wire 1".



Progress through the module by first determining the starting wire, then checking whether to cut each wire in the sequence. Each wire will need to be either cut or left uncut based on the state of the previous wire(s) in the sequence.

Determine Start Position

Follow the first rule below that applies:

1. If an RJ-45 port is present and there is a wire leading from plug 4 directly to plug 5, begin at that wire.
2. Otherwise, if there is a wire that begins at a plug matching the number of batteries on the bomb, begin with that wire.
3. Otherwise, if there is a wire that begins at a plug matching the first numeral of the serial number, begin at that wire.
4. Otherwise, if there is a lit indicator with the label CLR, disregard all further instructions and cut all wires present on this module in descending numerical order.
5. If none of the above apply, the start position is the plug containing a wire earliest in numerical order.

Cutting Wires

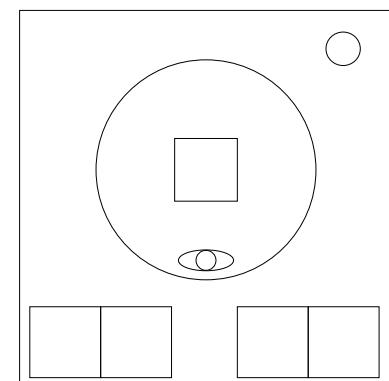
- Always cut the wire at the starting plug. Then progress to the next wire.
- From this position, cut the wires as directed by the steps in the following table. The starting step corresponds to the first letter in the serial number. If the serial number contains no letters, begin at step A.
- When progressing to the next wire, also progress to the next step alphabetically in the table to determine whether to cut the wire.
- “Previous wire(s)” may refer to wires beyond the original starting position in the sequence.
- If the wire at the starting plug is red, green or white, progress through the steps in reverse alphabetical order instead.

Step	Cut this wire if:
A or N	The previous wire is not yellow or blue or green.
B or O	The previous wire leads to an even numbered plug.
C or P	The previous wire should be cut.
D or Q	The previous wire is red or blue or black.
E or R	Two of the previous three wires share a color.
F or S	Exactly one of the previous two wires is the same color as this wire.
G or T	The previous wire is yellow or white or green.
H or U	The previous wire should not be cut.
I or V	The previous wire skips a plug.
J or W	The previous wire is not white or black or red.
K or X	The previous two wires are different colors.
L or Y	The previous wire does not lead to a position labeled 6 or less.
M or Z	Exactly one or neither of the previous two wires are white or black.

On the Subject of Orientation

If the bomb doesn't kill us a brain haemorrhage will.

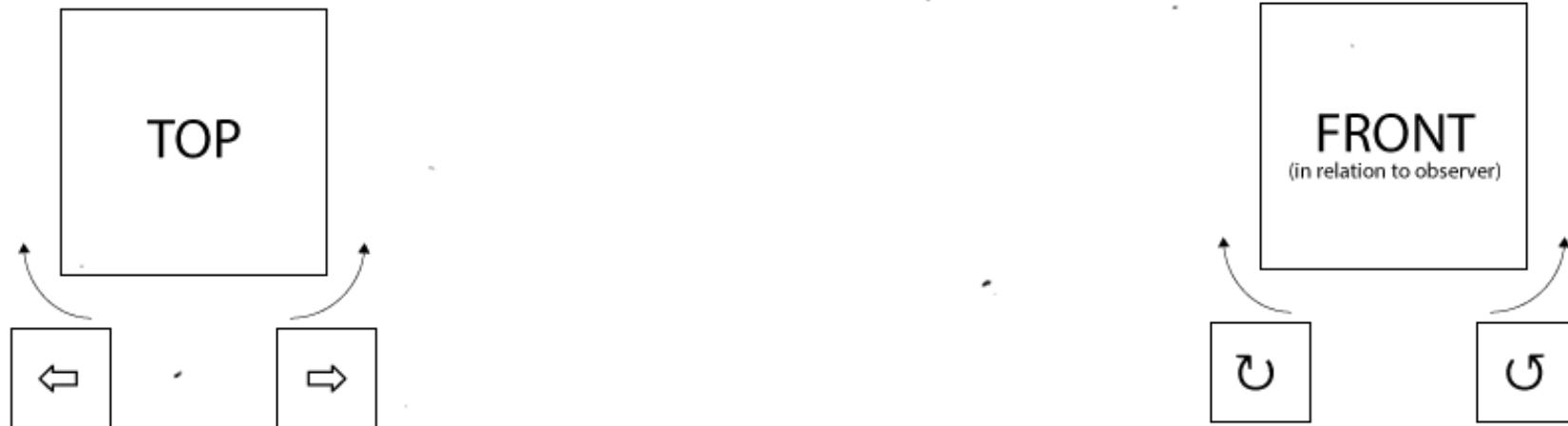
In order to diffuse this part of the bomb you will need good 3D orientation skills. A virtual cube needs to be rotated into a specific orientation using the four keys along the bottom. Unfortunately there is no display to indicate the current orientation of the virtual cube so you will have to imagine the state of the cube yourself.



The two keys in the bottom left will yaw the cube clockwise or anti-clockwise, respective to looking at the cube from the top.

The two keys in the bottom right will roll the cube clockwise or anti-clockwise, respective to the virtual observer. The virtual observer's position is indicated on the module as an eye. NOTE: The virtual observer's position may change.

For example, if the eye is at the bottom then it is facing the 'FRONT' face. Pressing 'Roll clockwise' will place the 'LEFT' face where the 'TOP' face is.



If the serial number on the bomb contains the letter R:

Rotate the cube so that the initial left face is in the same position as the initial top face, then press the SET button.

Otherwise, if the bomb has a lit indicator with the label TRN or has it has a lit/unlit indicator with the label CAR:

Rotate the cube so that the initial bottom face is in the same position as the initial right face, then press the SET button.

Otherwise, if the bomb has a PS2 port or there have been one or more strikes:

Rotate the cube so that the initial bottom face is in the same position as the initial front face and the initial left face is in the same position as the initial bottom face, then press the SET button.

Otherwise, if the serial number on the bomb contains either the number 7 or 8:

Rotate the cube so that the initial right face is in the same position as the initial bottom face and the initial back face is in the same position as the initial front face, then press the SET button.

Otherwise, if there are more than two batteries on the bomb or the virtual observer's initial position is facing the initial left face:

Rotate the cube so that the initial top face is in the same position as the initial bottom face, then press the SET button.

Otherwise:

Rotate the cube so that the initial top face is in the same position as the initial left face, then press the SET button.

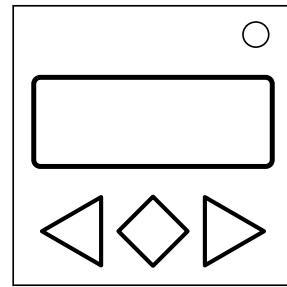
On a strike:

If you get strike then the virtual cube will be reset to the initial position, be aware you may need to select a new rule if the observer is now in a different position.

On the Subject of Coordinates

Column first or row first?

Picture a two-dimensional grid of rows and columns. To disarm this module, determine the size of the grid, determine the positions on the grid that are indicated by the module, and find out which position is duplicated.



Use the left and right arrows on the module to cycle through the clues. One of the clues indicates the size of the grid, the rest is a set of positions on the grid. Select one of the two clues that refer to the same grid position and use the middle button to submit it. Then select the other of those two clues and submit it.

To determine the size of the grid, find the clue that is represented in any of the formats described in Table 1. The italicized letters in the table stand in for a number on the module.

The grid locations may be notated in any of the formats listed in Table 2. The module may also describe locations using words such as “top”, “bottom”, “left”, “right”, “up”, “down”, “center”, “middle”, cardinal directions or clockface directions.

Table 1: grid size formats

Format	How to interpret
x	The number <i>x</i> is a product of two primes. The grid's width is the larger prime, the height the smaller.
(x)	Same as <i>x</i> , but width and height are swapped.
x*y	<i>x</i> is the width, <i>y</i> the height of the grid.
x by y	<i>x</i> is the height, <i>y</i> the width of the grid.
x*y	<i>x</i> is the total size of the grid, <i>y</i> the height.
x:y	<i>x</i> is the total size of the grid, <i>y</i> the width.

Table 2: grid location formats

[x,y]	Column, then row; top-left is [0,0].
letter number	Column, then row; top-left is A1.
<x, y>	Row, then column; top-left is <0, 0>.
x, y	Row, then column; top-left is 1, 1.
(x,y)	Column, then row; bottom-left is (0,0).
letter-number	Column, then row; bottom-left is A-1.
"x, y"	Row, then column; bottom-left is "0, 0".
x/y	Row, then column; bottom-left is 1/l.
[x]	Cell number in scanline order ^[1] ; top-left is [0].
xth	Cell number in scanline order ^[1] ; top-left is 1st.
#x	Cell number in Cartesian order ^[2] ; bottom-left is #1.
四十七	Cell number in Chinese reading order ^[3] ; top-right is —. See Table 3 for Chinese numerals reference. The example shown here represents the number 47.

Table 3: Chinese numerals

一	1	六	6
二	2	七	7
三	3	八	8
四	4	九	9
五	5	十	10

[1] Scanline order, also known as reading order, starts at the top-left, moves right across the row, and then continues likewise with each row from top to bottom.

[2] Cartesian order, also known as geometric order, starts at the bottom-left, moves right across the row, and then continues likewise with each row from bottom to top.

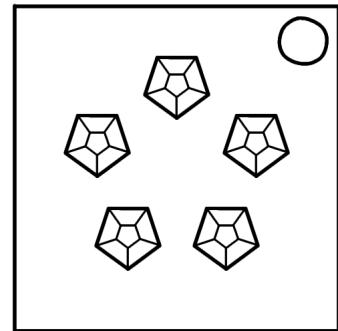
[3] Traditional Chinese reading order starts at the top-right, moves down the column, and then continues likewise with each column from right to left.

On the Subject of Perspective Pegs

Everything is different from the perspective of another.

Step 1: Key Colour

- Calculate the alphabetic position difference of the first two letters in the serial number. (A = 1, B = 2, etc.)
- Regard the difference between alphabetic positions to be positive.
- If there are four or more letters in the serial number, add the position difference of the third and fourth letters.
- Look up this number on the **Key Colour** table to obtain a colour.



Step 2: Sequence Permutation

- Starting from the peg with three or more sides in this colour and proceeding clockwise, read the outermost facing colour of each peg to form a colour sequence of length five; this is the current sequence.
- Determine which column of the **Sequence Permutation** table to use.
- For each entry in the relevant column:
 - If the prime sequence is present in the current sequence, replace the first occurrence with the alternate sequence to form the new current sequence.
 - Otherwise, if the reverse of the prime sequence is present, replace the last occurrence with the reverse of the alternate sequence.
- Finally, take the first three colours in the current sequence to obtain the key sequence.

Step 3: Key Sequence

- Angle the bomb with one peg close to you and in the centre of your view, then observe the five colours facing you in a line; this is the candidate sequence for this view.
- The key sequence is present in one of the five candidate sequences exactly once, either forward or reverse.
- Locate the candidate sequence that contains the key sequence, and press the three pegs representing the key sequence in order.
- If the key sequence is the same backwards as it is forwards, you can press the three pegs in either forward or reverse order.

Table 1.1 Key Colour

Regard the difference between alphabetic positions to be positive.

Take the least significant digit of the number, and look up in the table:

0	3	Red	5	8	Blue
4	9	Yellow	2	6	Purple
1	7	Green			

Table 1.2 Sequence Permutation

R – Red, Y – Yellow, G – Green, B – Blue, P – Purple

Determine which column to use based on battery count.

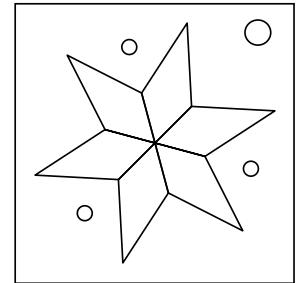
Perform permutations from top to bottom:

1 - 2 Batteries		3 - 4 Batteries		0, 5+ Batteries	
Prime	Alternate	Prime	Alternate	Prime	Alternate
R YY	B PY	B PB	Y BG	P YB	R GB
Y PG	P BR	YY P	B RP	Y RP	R YR
R GP	B GR	G RB	Y PB	G YR	G BP
Y BG	B YY	R PY	G BG	B YG	P GR
PP R	R YP	Y GG	P BR	R PY	G YB
B GB	P YG	G PB	Y GY	P PG	P BR
Y GB	G PY	P RP	B BG	R YY	BB R
PG G	G YR	R YR	R PB	Y GP	P YY

On the Subject of Simon Screams

He's angry! He's furious! He's enraged! He's had it!

- This module has six lights colored red, orange, yellow, green, blue and purple. These will flash in a sequence that grows longer with each stage. There are 3 stages.
- At each stage, consider the whole sequence of flashes. In the large table, find the first applicable row and the correct column. From that entry, take the letter in the position corresponding to the current stage and look at its corresponding column in the smaller table.
- Go through that column from top to bottom and press every color whose condition applies. The colors are (R)ed, (O)range, (Y)ellow, (G)reen, (B)lue, (P)urple, and “#” means “serial number”.
- Every time the sequence flashes again, your current stage’s input is reset.



	A	C	D	E	F	H
≥ 3 indicators	Y	O	G	R	B	P
≥ 3 ports	P	Y	R	B	O	G
≥ 3 digits in #	O	G	B	P	R	Y
≥ 3 letters in #	G	B	O	Y	P	R
≥ 3 batteries	R	P	Y	O	G	B
≥ 3 bat. holders	B	R	P	G	Y	O

Stage 1: first flashing color
Stage 2: second flashing color
Stage 3: third flashing color

red	orange	yellow	green	blue	purple

If three adjacent colors flashed in clockwise order	FFC	CEH	HAF	ECD	DDE	AHA
Otherwise, if a color flashed, then an adjacent color, then the first again	AHF	DFC	ECH	CDE	FEA	HAD
Otherwise, if at most one color flashed out of red, yellow, and blue	DED	ECF	FHE	HAA	AFH	CDC
Otherwise, if there are two colors opposite each other that didn't flash	HCE	ADA	CFD	DHH	EAC	FEF
Otherwise, if two adjacent colors flashed in clockwise order	CAH	FHD	DDA	AEC	HCF	FEF
Otherwise	EDA	HAE	AEC	FFF	CHD	DCH

On the Subject of the Mystic Square

O knight in shining armour, deliver us from the evils of the skull!

1. “row”/“column” on this page always refers to the table below.

2. Do not uncover the skull before uncovering the knight.

3. How to find the skull:

1. If the middle position is empty, the skull is under the 7. Continue to step 4.

2. The middle number determines which row/column to use. If the last digit in the serial number is in one of the five cross positions as shown in the diagram on the right, use rows. Otherwise, use columns.

X		X
	X	
X		X

3. Start from the empty position on the module. Using the table below, consider each number in the row/column and check if it's a direct neighbour to the current position. If it is, continue from that position. The final position is where the skull is located.

4. To disarm the module, move the sliders into a target constellation shown on the next page.

		last serial digit does not lie on the cross-parts of the module							
	number in the middle of the module	1	2	3	4	5	6	7	8
on the cross-part	1	1	3	5	4	6	7	2	8
	2	2	5	7	3	8	1	4	6
	3	6	4	8	1	7	3	5	2
	4	8	1	2	5	3	4	6	7
	5	3	2	6	8	4	5	7	1
	6	7	6	1	2	5	8	3	4
	7	4	7	3	6	1	2	8	5
	8	5	8	4	7	2	6	1	3

“row”/“column” on this page always refers to the module.

Determining the desired constellation:

Before moving any sliders, use the sum of the rows as R1, R2 and R3 and the sum of the columns as C1, C2 and C3 to look up the target constellation in the table below. The following constellation is also always acceptable.



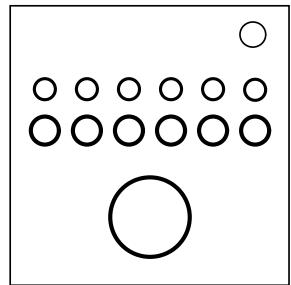
1	2	3
4	5	6
7	8	

	C1 > C2,C3	C2 > C1,C3	C3 > C1,C2	else
R1 > R2,R3	1 ? 2 ? ? ? 4 ? 3	1 ? 2 ? ? ? 3 ? 4	1 ? 3 ? ? ? 7 ? 5	1 ? 3 ? ? ? 5 ? 7
	? 1 ? 4 ? 2 ? 3 ?	? 1 ? 3 ? 2 ? 4 ?	? 2 ? 8 ? 4 ? 6 ?	? 2 ? 6 ? 4 ? 8 ?
	1 ? ? ? 2 ? ? ? 3	? ? 3 ? 2 ? 1 ? ?	3 ? ? ? 2 ? ? ? 1	? ? 1 ? 2 ? 3 ? ?
else	1 2 3 ? 4 ? ? ? ?	1 ? ? 2 4 ? 3 ? ?	? ? ? ? 4 ? 1 2 3	? ? 1 ? 4 2 ? ? 3

On the Subject of Light Cycles

The name "blitzenlights" was taken.

There are six colored LEDs in a row which continuously flash in sequence from left to right. To disarm this module, determine a sequence of colors, then input that sequence by pressing the button when each color is lit. (For example, to enter the color red, press the button when the red LED is lit.)



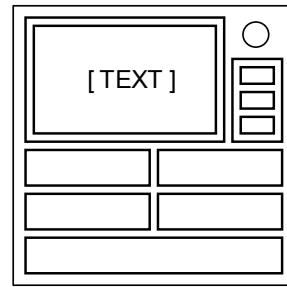
Determine the correct sequence of colors as follows:

- Start with the order of the LEDs on the module. This is a sequence of six colors.
- Take the first and last character of the serial number, then the second and second-last, etc. up to the last and first character, resulting in a list of 6 pairs.
- For each such pair of characters, look up the information in the following table. Use the first in the pair for the row, the second for the column. A letter in the table refers to a color (R = red, Y = yellow, G = green, B = blue, M = magenta, W = white), while a number refers to a position in your sequence (1 through 6). Swap those two colors in your sequence.
- After performing the six swaps, enter the resulting sequence.

	A, B, C	D, E, F	G, H, I	J, K, L	M, N, O	P, Q, R	S, T, U	V, W, X	Y, Z, 0	1, 2, 3	4, 5, 6	7, 8, 9
A	5/B	B/R	M/G	Y/5	4/1	R/W	6/4	1/6	2/3	3/M	G/Y	W/2
B	2/R	6/M	4/3	5/B	R/5	Y/2	1/G	M/Y	W/6	3/4	B/W	G/1
C	M/Y	2/4	Y/R	3/5	W/2	G/B	1/W	R/3	5/G	4/6	B/M	6/1
D	5/6	6/3	1/4	M/2	R/Y	2/M	W/R	B/G	Y/W	3/B	G/1	4/5
E	B/R	W/2	2/3	1/4	M/B	5/6	Y/W	R/M	G/Y	6/G	3/5	4/1
F	R/Y	2/G	1/M	Y/5	5/R	W/B	6/3	B/1	M/4	G/6	3/2	4/W
G	Y/1	5/4	2/W	R/Y	1/R	B/3	6/G	G/6	M/B	W/5	4/2	3/M
H	3/5	W/Y	G/2	2/B	5/G	M/R	B/3	1/4	4/6	Y/M	6/W	R/1
I	R/M	4/5	5/W	B/1	M/6	3/2	W/B	G/Y	Y/R	1/4	6/G	2/3
J	W/B	R/6	5/Y	4/1	2/5	Y/3	M/W	3/2	B/G	G/M	1/R	6/4
K	6/4	B/2	W/G	R/5	G/1	2/Y	Y/R	M/B	1/6	3/W	5/3	4/M
L	6/4	B/5	W/6	1/G	R/2	4/R	G/W	3/M	2/B	Y/3	5/Y	M/1
M	W/3	3/G	2/4	Y/M	M/2	R/5	6/R	B/6	G/Y	5/B	1/W	4/1
N	1/Y	6/M	2/1	G/R	3/G	5/B	R/4	4/3	W/2	Y/W	B/5	M/6
O	R/5	3/G	2/3	W/4	B/2	1/M	5/6	M/1	4/Y	G/B	6/R	Y/W
P	1/4	4/B	6/2	3/W	M/R	Y/6	B/Y	2/G	5/M	G/5	R/3	W/1
Q	5/G	M/B	4/W	Y/2	R/M	W/4	6/1	3/6	B/Y	1/5	G/R	2/3
R	M/G	5/6	G/M	W/5	Y/2	R/4	B/1	1/B	2/R	4/3	6/W	3/Y
S	R/Y	6/5	5/G	G/B	W/M	4/3	1/W	B/1	3/6	2/4	Y/2	M/R
T	G/3	B/2	6/W	M/B	1/5	Y/4	5/M	W/R	4/6	3/Y	2/G	R/1
U	5/1	W/3	4/5	3/4	Y/W	1/Y	B/G	6/2	M/6	G/R	2/M	R/B
V	M/6	6/B	1/G	3/5	W/R	B/4	G/M	R/1	2/W	5/2	4/Y	Y/3
W	Y/M	B/1	5/3	2/G	3/2	R/5	1/4	W/6	4/W	G/R	M/Y	6/B
X	4/2	R/B	W/5	Y/M	2/Y	5/1	B/R	G/3	M/G	3/6	6/W	1/4
Y	G/Y	1/R	5/4	4/G	3/B	M/6	2/5	Y/2	R/1	W/3	B/W	6/M
Z	G/B	B/G	1/5	M/1	3/M	R/3	Y/W	6/Y	5/2	4/6	W/R	2/4
0	2/R	R/B	5/G	W/2	Y/1	4/Y	3/5	1/M	B/W	G/6	6/4	M/3
1	R/4	W/6	3/2	2/W	4/Y	6/5	B/R	5/G	Y/B	G/M	M/1	1/3
2	4/B	B/3	6/4	W/1	M/Y	R/6	G/5	Y/W	5/2	2/R	3/G	1/M
3	B/6	M/3	4/B	1/4	2/5	Y/1	G/Y	R/W	W/G	5/2	6/M	3/R
4	M/R	2/B	W/5	6/Y	B/3	4/2	G/1	Y/6	5/G	3/M	R/W	1/4
5	Y/1	5/6	1/W	W/4	B/G	G/5	4/M	2/B	3/R	6/3	M/2	R/Y
6	3/4	W/B	Y/G	5/M	R/1	G/W	1/2	6/Y	B/R	M/6	4/3	2/5
7	4/G	6/5	Y/4	G/B	3/1	M/Y	5/3	1/M	2/R	R/2	B/W	W/6
8	Y/B	R/2	W/R	5/3	1/W	3/5	B/M	G/4	6/Y	4/G	2/1	M/6
9	G/Y	3/1	5/M	R/2	6/W	M/B	Y/6	2/4	4/G	B/5	1/R	W/3
	A, B, C	D, E, F	G, H, I	J, K, L	M, N, O	P, Q, R	S, T, U	V, W, X	Y, Z, 0	1, 2, 3	4, 5, 6	7, 8, 9

On the Subject of Sea Shells

Clear communication is crucial when defusing bombs. One can only assume that this module doesn't want to be defused.



- The Sea Shells module consists of a display and five buttons.
- The display shows a phrase. The first two words of the phrase refer to a row of Table 1. The third and fourth words refer to a column of Table 1. The remainder of the phrase refers to Table 2.
- Table 1 will give a code, and Table 2 will provide a key to turn the code into a sequence of words.
- The buttons must be used to input the sequence of words. Pressing an incorrect button will result in a strike and reset the current stage of the module.
- Inputting a correct sequence three times will disarm the module.

Table 1:

	SEA SHELLS	SHE SHELLS	SEA SELLS	SHE SELLS
SHE SELLS	BDABDAB	ACEEAC	EACEACE	DAABDAB
SHE SHELLS	BEEBBE	CDCCDB	EAEEAA	BEEDA
SEA SHELLS	ABABA	EAAEEA	D BEAC	ABDBAA
SEA SELLS	ACACEAC	DBAEC	E BDADAB	CECEC

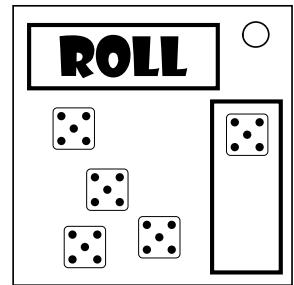
Table 2:

ON THE SEA SHORE	A = shoe D = sit	B = shih tzu E = sushi	C = she
ON THE SHE SORE	A = can D = 2	B = toucan E = cancan	C = tutu
ON THE SHE SURE	A = witch D = twitch	B = switch E = stitch	C = itch
ON THE SEESAW	A = burglar alarm D = burger	B = Bulgaria E = llama	C = armour

On the Subject of Yahtzee

When has bomb defusal ever been a game of chance?

There are five dice in the colors of purple, yellow, blue, white and black. Start by rolling the dice. Then choose which dice to keep and which to reroll. You may only keep dice of the same value. Keep repeating this process until you get a Yahtzee.*



At each stage, the dice to keep are given by the following rules:

If you just rolled 5 dice:

Follow the first rule that applies:

- **Large straight:*** keep the die with the highest value equal to a digit in the serial number; if none, keep the purple.
- **Small straight:*** keep the outlier.*
- **Three of a kind or full house:*** keep the white die if there are ≥ 2 lit indicators; otherwise, the black die if there are ≥ 2 unlit; otherwise, the highest value not in the three-of-a-kind.
- **Four of a kind or two pairs:** keep any dice matching the number of batteries; otherwise, matching the number of battery holders; otherwise the yellow die.
- **Pair:** keep the die of the color listed in the first applicable row of the following table:

If there is a...	Die color
parallel port	purple
PS/2 port	blue
RCA port	white
RJ port	black
otherwise	yellow

- **Otherwise:** you must roll all the dice again.
- In all of the above cases, dice of the same value as a die to be kept may also be kept.

* **Yahtzee:** All dice show the same value.

Large straight: Five consecutive values.

Small straight: Four consecutive values. The **outlier** is the fifth die.

Three of a kind: Three dice of equal value, but not four.

Full house: Three of a kind plus two of another kind.

These terms always refer to all of the dice, regardless of which were rolled and which were kept.

If you just rolled 4 dice:

- **Straight (small or large):*** you must reroll the die you previously kept and keep a die or dice of a different value.
- **Otherwise:**
 - Rerolling all dice is always allowed.
 - Keeping 1 die is only allowed if it isn't black.
 - Keeping 2 dice is only allowed if neither is blue.
 - Keeping 3 dice is only allowed if the values of the other two both aren't in the serial number.
 - Keeping 4 dice is only allowed if the fifth die has a bigger value.
 - Keeping a number of dice equal to the number of port plates is not allowed unless it's 2 or less.

If you just rolled 3 dice:

- **Full house:*** reroll the pair if there are any duplicate ports; otherwise, reroll the three-of-a-kind.
- **Otherwise:**
 - Keeping 0, 1 or 2 dice is allowed.
 - Keeping 3 dice is only allowed if purple or white was kept during the previous roll.
 - Keeping 4 dice is only allowed if the fifth die has a smaller value.
 - Keeping any number of dice is allowed if the value of the kept dice is in the serial.

If you just rolled 2 dice:

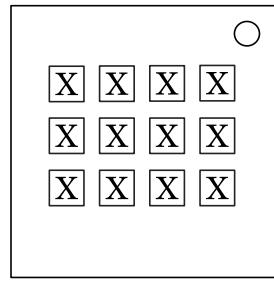
- Keeping 0, 1, 2 or 3 dice is allowed.
- Keeping 4 dice is only allowed if yellow or blue was kept during the previous roll or if the fifth die is 1 away in value from the value of the kept dice.

If only 1 die is left to roll:

Keep rolling it until you achieve a Yahtzee.

On the Subject of Text Field

It's trivial. Just 6 letters out there! Wait, what did you say? Each letter has 5 rules to check? Never mind then.



- This module contains a 3×4 letter field. All letters in the field are the same and in the range A-F.
- Based on the letter, see **Section A** and follow the ruleset for that letter from top to bottom. Obtain a table name from the first rule that applies.
- Find the corresponding table in **Section B** based on the previous step.
- Select all letters in the field that match the table. The module is disarmed when all matching letters have been selected.
- **Careful:** Pressing a button before the light comes on or repeating the same button will result in a strike!

See Appendix A for indicator identification reference.

See Appendix C for port identification reference.

Section A: Letter rulesets

Letter A

- Has CLR lit indicator: 1459
- Has more than 2 batteries: BBFF
- Has exactly 1 battery: 7F67
- Has FRK lit indicator: DC52
- Otherwise: AOC1

Letter B

- No batteries: 965A
- Last digit of serial number is odd: 1459
- No serial port: DC52
- Has TRN lit indicator: AOC1
- Otherwise: 7F67

Letter C

- Has DVI-D port: AA12
- Has exactly 2 batteries: FB01
- No vowels in serial number: DC52
- Has CAR lit indicator: 1459
- Otherwise: 7F67

Letter D

- Has parallel port: FB01
- Has less than 2 batteries: AA12
- Has SIG lit indicator: BBFF
- No PS/2 port: 965A
- Otherwise: 1459

Letter E

- Has less than 3 batteries: 7F67
- No stereo RCA port: AA12
- Has BOB lit indicator: AOC1
- Has RJ-45 port: BBFF
- Otherwise: DC52

Letter F

- No serial port: DC52
- Has vowels in serial number: AOC1
- Has IND lit indicator: 1459
- Last digit of serial number is even: FB01
- Otherwise: AA12

Section B: Table listings**Table FB01**

D	C	F	A
B	E	F	F
B	B	B	C

Table DC52

C	B	D	E
A	F	D	C
B	E	B	D

Table 965A

C	B	E	F
E	B	F	E
D	C	A	A

Table 7F67

A	D	C	B
A	C	B	C
A	E	F	A

Table 1459

B	A	B	B
C	D	F	D
D	F	C	E

Table AOCL

E	C	F	A
C	F	B	D
F	F	B	C

Table BBFF

D	A	B	F
D	F	B	E
C	E	B	A

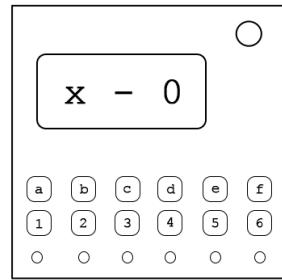
Table AA12

B	E	A	B
E	D	F	A
B	C	E	C

On the Subject of Chess

Under pressure, chess can feel more like a game of battleships.

This module is based on a **6x6 chessboard** (referenced on the following page) and all figures follow the standard FIDE movement rules.



The chess module will present with a display and two rows of six buttons each.

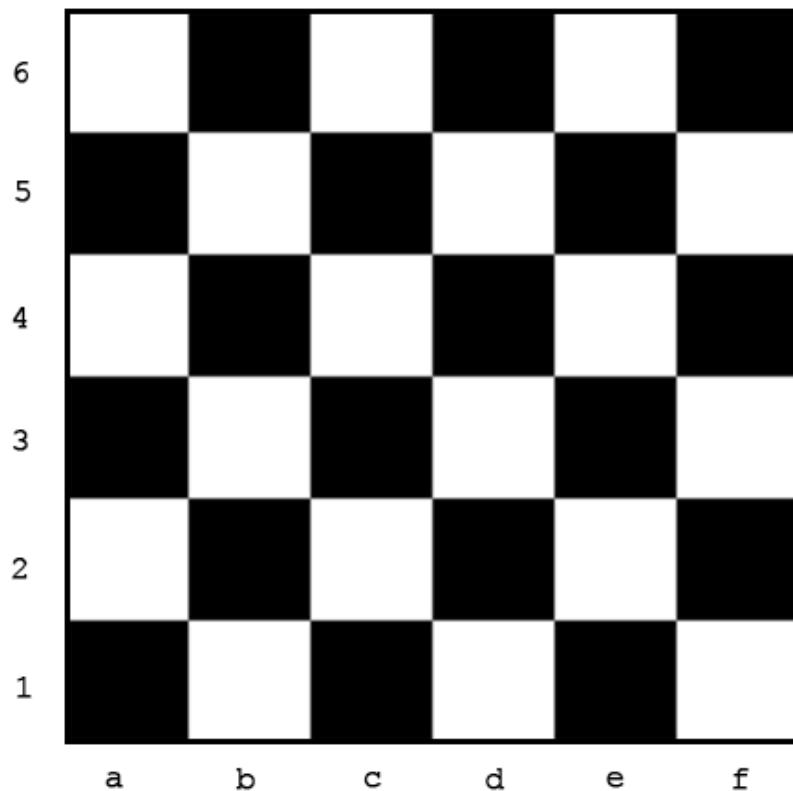
- There are six unique coordinates that represent six positions on the chessboard.
- Use the numbered keys in the bottom row to browse through the different coordinates. A green LED below the button will indicate the position of the currently selected coordinate.
- Using the reference table below, each position can be assigned a certain chess figure.
- The chess figures will cover 35 of the 36 possible fields with their combined movesets.
- All chess figures are colorless but can block each other's movement.
- Find the one field that isn't covered by any of the chess figures and enter the coordinate to defuse the module.
- To enter the coordinate, press the letter first, then the number. The LEDs will turn red to confirm the input of a solution.

Use this table as reference to determine the correct figure for each position:

<p>Position #1: Monarchy vs Theocracy</p> <p>Occupied by a king if Position #5 is occupied by a queen. Otherwise, the field is occupied by a bishop.</p>
<p>Position #2: Commander of the Army</p> <p>Occupied by a rook if the last digit of the serial number is odd. Otherwise, the field is occupied by a knight.</p>
<p>Position #3: A Matter of Regents</p> <p>Occupied by a queen if there are less than two rooks on the board. Otherwise, the field is occupied by a king.</p>
<p>Position #4: The Iron Tower</p> <p>Always occupied by a rook.</p> <p><i>"Neither of two evils must thy strike claim; Instead smite the darkness between the same."</i></p>
<p>Position #5: Conflict between Good and Evil</p> <p>Occupied by a queen if the field is white. Otherwise, the field is occupied by a rook.</p>
<p>Position #6: The Scepter, the Sword and the Crosier</p> <p>Occupied by a queen if there are no other queens on the board. Otherwise, occupied by a knight if there are no other knights on the board. Otherwise, the field is occupied by a bishop.</p>

Chess Board Reference

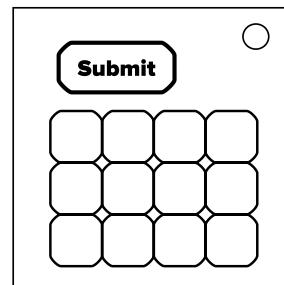
Use the following graphic as a reference for the chess board layout



On the Subject of Adjacent Letters

UP, down, left, right, UP, down, left, right...!

- Every button will have a different letter on it.
- Check the table to determine which buttons to press.
- Each letter in the “letter” column that has one of the letters in the “left/right” column directly left or right of it on the keypad must be pressed.
- Each letter in the “letter” column that has one of the letters in the “above/below” column directly above or below it on the keypad must be pressed.
- Press Submit to submit your answer. **Note:** Multiple buttons can be pressed and they can be in **any** order.



Letter	Left/right	Above/below
A	GJMOY	HKPRW
B	IKLRT	CDFYZ
C	BHIJW	DEMTU
D	IKOPQ	CJT UW
E	ACGIJ	KSUWZ
F	CERVY	AGJPQ
G	ACFNS	HOQYZ
H	LRTUX	DKMPS
I	DLOWZ	EFNUV
J	BQT UW	EHIOS
K	AFPXY	DIORZ
L	GKPTZ	ABRVX
M	EILQT	BFPWX

Letter	Left/right	Above/below
N	PQRSV	AFGHL
O	HJLUZ	IQSTX
P	DMNOX	CFHKR
Q	CEOPV	BDIKN
R	AEGSU	BNOXY
S	ABEKQ	GMVYZ
T	GVXYZ	CJLSU
U	FMVXZ	BILNY
V	DHMNW	AEJQX
W	DFHMN	GLQRT
X	BDFKW	AJNOV
Y	BCHSU	EGMTW
Z	JNRSY	CLMPV

On the Subject of Bitwise Operations

Nobody's favorite kind of math. Who even likes math, anyway?

- There are 2 screens on the module:
 1. Bitwise operator (AND, OR, XOR, NOT)
 2. Result input
- Use the two bytes obtained from the tables below, and the operator from the first display, to determine the answer. In these tables, MSB is the most significant bit, LSB the least significant bit.

Byte 1	Bit	Byte 2
No AA batteries	MSB	1 or more D battery
Parallel port		3 or more ports
Lit indicator NSA		2 battery holders or more
More modules than you have (starting) time in minutes		Lit indicator BOB
More than one lit indicator		More than one unlit indicator
Number of modules divisible by 3		Odd serial number
Less than 2 D batteries		Even number of modules
Less than 4 ports	LSB	2 or more batteries

Here is a table of explanations of each bitwise operator:

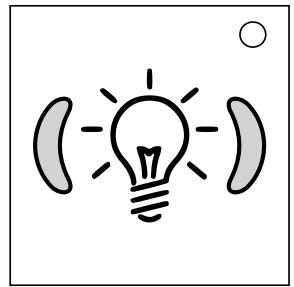
Info	AND	OR	XOR	NOT
HOW	Going bit by bit, if both bits are 1, the return bit is 1. Otherwise, the return bit is 0.	Going bit by bit, if either (or both) bit is 1, the return bit is 1. Otherwise, the return bit is 0.	Going bit by bit, if either (but not both) bits are 1, the return bit is 1. Otherwise, the return bit is 0.	Ignore the second operand. Going bit by bit, the return bit is the opposite.

MATH	bit1 && bit2	bit1 bit2	(bit1 && !bit2) (!bit1 && bit2)	<table border="1"><tr><td>XOR</td><td><input type="radio"/></td></tr><tr><td>▲■▲■■■■■■■■</td><td><input checked="" type="radio"/></td></tr><tr><td>0 0 1 0 1 1 1 1</td><td><input type="radio"/></td></tr><tr><td colspan="2">SUBMIT</td></tr></table>	XOR	<input type="radio"/>	▲■▲■■■■■■■■	<input checked="" type="radio"/>	0 0 1 0 1 1 1 1	<input type="radio"/>	SUBMIT	
XOR	<input type="radio"/>											
▲■▲■■■■■■■■	<input checked="" type="radio"/>											
0 0 1 0 1 1 1 1	<input type="radio"/>											
SUBMIT												

On the Subject of The Bulb

How many bomb defusal experts does it take to screw in a light bulb?

This module has two buttons labeled **I** and **O** and a light bulb, which is either see-through (translucent) or opaque, and is one of six colors: blue, green, purple, red, white or yellow.



If you incur a strike because you pushed a wrong button, ignore it and continue. If you incur a strike because you unscrewed or screwed in the bulb at an incorrect time, you must undo that before continuing.

Begin at Step 1 below.

While the bulb is screwed in, a long press on either button will reset the module back to Step 1. Attempting this while the bulb is out will incur a strike.

Step 1 • If the light is on and the bulb is see-through, press **I** and go to **Step 2**.
• If the light is on and the bulb is opaque, press **O** and go to **Step 3**.
• Otherwise, unscrew the bulb and go to **Step 4**.

Step 2 • If the bulb is red, press **I**, then unscrew it and go to **Step 5**.
• If the bulb is white, press **O**, then unscrew it and go to **Step 6**.
• Otherwise, unscrew the bulb and go to **Step 7**.

Step 3 • If the bulb is green, press **I**, then unscrew it and go to **Step 6**.
• If the bulb is purple, press **O**, then unscrew it and go to **Step 5**.
• Otherwise, unscrew the bulb and go to **Step 8**.

Step 4 • If the bomb has any of the following indicators: CAR, IND, MSA or SND, press **I** and go to **Step 9**.
• Otherwise, press **O** and go to **Step 10**.

Step 5 • If the light went off at Step 1, press the same button again, then screw the bulb back in.
• Otherwise, press the button you haven't yet pressed, then screw the bulb back in.

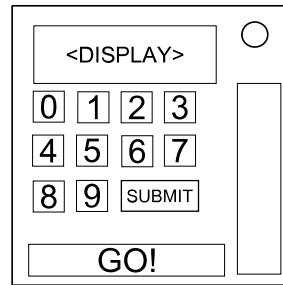
Step 6 • If the bulb went off when you pressed **I**, press the button that you pressed in Step 1, then screw the bulb back in.
• Otherwise, press the button that you pressed in Step 2 or 3, then screw the bulb back in.

- Step 7**
- If the bulb is green, press **I**, remember SIG and go to **Step 11**.
 - If the bulb is purple, press **I**, then screw it back in and go to **Step 12**.
 - If the bulb is blue, press **O**, remember CLR and go to **Step 11**.
 - Otherwise, press **O**, then screw the bulb back in and go to **Step 13**.
- Step 8**
- If the bulb is white, press **I**, remember FRQ and go to **Step 11**.
 - If the bulb is red, press **I**, then screw it back in and go to **Step 13**.
 - If the bulb is yellow, press **O**, remember FRK and go to **Step 11**.
 - Otherwise, press **O**, then screw the bulb back in and go to **Step 12**.
- Step 9**
- If the bulb is blue, press **I** and go to **Step 14**.
 - If the bulb is green, press **I**, then screw it back in and go to **Step 12**.
 - If the bulb is yellow, press **O** and go to **Step 15**.
 - If the bulb is white, press **O**, then screw it back in and go to **Step 13**.
 - If the bulb is purple, screw it back in, then press **I** and go to **Step 12**.
 - Otherwise, screw the bulb back in, then press **O** and go to **Step 13**.
- Step 10**
- If the bulb is purple, press **I** and go to **Step 14**.
 - If the bulb is red, press **I**, then screw it back in and go to **Step 13**.
 - If the bulb is blue, press **O** and go to **Step 15**.
 - If the bulb is yellow, press **O**, then screw it back in and go to **Step 12**.
 - If the bulb is green, screw it back in, then press **I** and go to **Step 13**.
 - Otherwise, screw the bulb back in, then press **O** and go to **Step 12**.
- Step 11**
- If the bomb has the remembered indicator, press **I**, then screw the bulb back in.
 - Otherwise, press **O**, then screw the bulb back in.
- Step 12**
- If the light is now on, press **I**.
 - Otherwise, press **O**.
- Step 13**
- If the light is now on, press **O**.
 - Otherwise, press **I**.
- Step 14**
- If the bulb is opaque, press **I**, then screw the bulb back in.
 - Otherwise, press **O**, then screw the bulb back in.
- Step 15**
- If the bulb is see-through, press **I**, then screw the bulb back in.
 - Otherwise, press **O**, then screw the bulb back in.

On the Subject of Fast Math

Gotta go fast!

- Two letters will be displayed on the screen. Use the number pad, then the submit button to disarm the module. The module will have 3 – 5 stages before being disarmed.
- Press the "GO!" button to start. You have 10 seconds to submit the **two digits** answer. (The time can be changed in the Mod settings file.)
- If the countdown meter reaches 0, a strike will be recorded, and the module will reset.
- Once a stage is complete, the timer will restart, and two new letters will show on the display.
- Follow these rules before submitting your answer:
 - If there is a lit MSA indicator, add 20 to your total number.
 - If there is a serial port present, add 14 to your total number.
 - If the serial number contains "F, A, S or T", subtract 5 from your total number.
 - If there is an RJ-45 port present, add 27 to your total number.
 - If the bomb has more than 3 batteries, subtract 15 from your total number.
- If the total number is greater than 99, use the last two digits of the total number. If the total number is less than 0, add 50 to the total number.

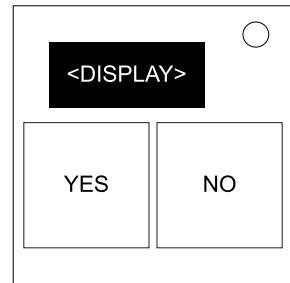


Right Letter:		A	B	C	D	E	G	K	N	P	S	T	X	Z
Left Letter:	A	25	11	53	97	02	42	51	97	12	86	55	73	33
	B	54	07	32	19	84	33	27	78	26	46	09	13	58
	C	86	37	44	01	05	26	93	49	18	69	23	40	22
	D	54	28	77	93	11	00	35	61	27	48	13	72	80
	E	99	36	23	95	67	05	26	17	44	60	26	41	67
	G	74	95	03	04	56	23	54	29	52	38	10	76	98
	K	88	46	37	96	02	52	81	37	12	70	14	36	78
	N	54	43	12	65	94	03	47	23	16	62	73	46	21
	P	07	33	26	01	67	26	27	77	83	14	27	93	09
	S	63	64	94	27	48	84	33	10	16	74	43	99	04
	T	35	39	03	25	47	62	38	45	88	48	34	31	27
	X	67	30	27	71	09	11	44	37	18	40	32	15	78
	Z	13	23	26	85	92	12	73	56	81	07	75	47	99

On the Subject of Color Flash

It's easy to identify colors. Red, Blue, Green, etc. Turns out it's a bit harder when you display a word color in a different color though...

- A color flash module will repeatedly flash a sequence of 8 different words representing colors in different colors.
- The possible colors are Red, Yellow, Green, Blue, Magenta and White.
- There is also a Yes button and a No button on the module.
- Only one of the Yes and No buttons need to be pressed to disarm the module, but must be pressed at the correct time according to the rules below.
- The color of the last word in the sequence determines which set of rules to follow below.
- Follow the rules down from the top-most rule, down to the bottom-most rule for the block that applies to your module.



The color of the last word in the sequence is Red:

If Green is used as the word at least three times in the sequence, press Yes on the third time Green is used as either the word or the color of the word in the sequence.

Otherwise, if Blue is used as the color of the word exactly once, press No when the word Magenta is shown.

Otherwise, press Yes the last time White is either the word or the color of the word in the sequence.

The color of the last word in the sequence is Yellow:

If the word Blue is shown in Green color, press Yes on the first time Green is used as the color of the word.

Otherwise, if the word White is shown in either White or Red color, press Yes on the second time in the sequence where the color of the word does not match the word itself.

Otherwise, count the number of times Magenta is used as either the word or the color of the word in the sequence (the word Magenta in Magenta color only counts as one), and press No on the color in the total's position (e.g. a total of 4 means the fourth color in sequence).

Continuation of previous table...

The color of the last word in the sequence is Green:

If a word occurs consecutively with different colors, press No on the fifth entry in the sequence.

If Magenta is used as the word at least three times in the sequence, press No on the first time Yellow is used as either the word or the color of the word in the sequence.

Otherwise, press Yes on any color where the color of the word matches the word itself.

The color of the last word in the sequence is Blue:

If the color of the word does not match the word itself three times or more in the sequence, press Yes on the first time in the sequence where the color of the word does not match the word itself.

If the word Red is shown in Yellow color, or the word Yellow is shown in White color, press No when the word White is shown in Red color.

Otherwise, press Yes the last time Green is either the word or the color of the word in the sequence.

The color of the last word in the sequence is Magenta:

If a color occurs consecutively with different words, press Yes on the third entry in the sequence.

If the number of times the word Yellow appears is greater than the number of times that the color of the word is Blue, press No the last time the word Yellow is in the sequence.

Otherwise, press No on the first time in the sequence where the color of the word matches the word of the seventh entry in the sequence.

The color of the last word in the sequence is White:

If the color of the third word matches the word of the fourth word or fifth word, press No the first time that Blue is used as the word or the color of the word in the sequence.

If the word Yellow is shown in Red color, press Yes on the last time Blue is used as the color of the word.

Otherwise, press No.

On the Subject of Rubik's Cube

Remember this impossible thing? Now it's on a bomb. Have fun.

The bomb presents an unsolved Rubik's cube. To disarm the module, solve the Rubik's cube. The following steps can be used to determine the sequence of moves necessary to solve it. If you get lost, press the Reset button to return the cube to its original state.

This module has
a Rubik's Cube
on it.

Table 1

U	L	F	Moves	
0	1	2	L'	F'
3	4	5	D'	U'
6	7	8	U	B'
9	A	B	F	B
C	D	E	L	D
F	G	H	R'	U
I	J	K	U'	F
L	M	N	B'	L'
O	P	Q	B	R
R	S	T	D	L
U	V	W	R	D'
X	Y	Z	F'	R'

Table 2

Color	Number
Yellow	1
Blue	2
Red	3
Green	4
Orange	5
White	6

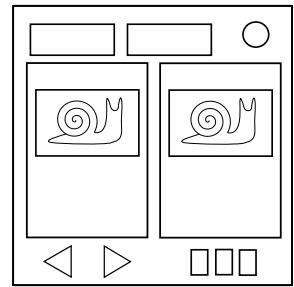
Clarifications:

- “F” or “front face” refers to the face with the Reset button. All other faces are correspondingly relative to that. The faces visible from a direct view at the module are U, L and F.
- The “color” of a face is the color of the sticker in the middle of that face.
- A move is performed by rotating the corresponding face clockwise. A prime (') indicates the opposite move (i.e. counter-clockwise).

On the Subject of Monsplode Trading Cards

A Bob in the hand is worth two in... the Buhar?

- Based on the 3 Monsplode™ Trading Cards in your hand, correctly accept or decline 3 trade offers using the “Keep” and “Trade” buttons above the cards.
- Each card will display a Monsplode, a rarity symbol, and a Print Version.
- Your hand is shown on the left. Cycle through the cards using the left/right buttons in order to select the one you wish to trade. The offer is shown on the right.
- An incorrect action will result in a strike, but if you attempted a trade you will still keep the card you received during that action.



Calculating a Card's Rarity Value

1. Identify the card's initial value: Using the “Initial Value Reference Table”, find the row that contains your Monsplode’s™ name. Determine which of the following formats the first two characters of bomb’s serial number are in:
XX (e.g. KT, NE), **X#** (e.g. C4, H8), **#X** (e.g. 2A, 5D), **##** (e.g. 20, 17)
 This will give you your card’s initial value.

2. Adjust the card's value: Look at the “Print Version” at the left side of the card. For each indicator on the bomb that contains the letter of the Print Version, **add 1** to the card’s value if it’s lit and **subtract 1** if it’s unlit.
 Continue adjusting the card’s value using the rules below:

If the bomb has **no batteries**, **keep the card's current value**.
 Otherwise, if the numeral of the Print Version is **greater** than the amount of batteries on the bomb, **add 1** to the card’s current value.
 Otherwise, if the numeral of the Print Version is **less than** the amount of batteries on the bomb, **subtract 1** from the card’s current value.
 Otherwise, **add 2** to the card’s current value.

If the Print Version’s numeral is **equal** to the alphanumeric value of its letter, the card is fake and has 0 value. This overrides **everything**.

3. Calculate the multiplier: Use the rules below based on the symbol in the card's bottom-left corner and "Rarity Symbol Reference Table":

If the card is **Common**, the multiplier is **1**.

Otherwise, if the card is **Uncommon**, the multiplier is **1.25**.

Otherwise, if the card is **Rare**, the multiplier is **1.5**.

Otherwise, if the card is **Ultra Rare**, the multiplier is **1.75**.

If the card is a **foil** (has shiny spots on it), add **0.5** to the multiplier.

For each **bent corner** of the card **subtract 0.25** from the multiplier.

Multiply the card's adjusted value by the calculated multiplier.

If the card's value is a negative number, it has **0 value**.

If all of your cards have higher value than the offered card, press "**Keep**".

Otherwise, trade your **least valued card** by pressing "**Trade**".

If there are multiple cards with the least value, you can trade **any of them**.

Rarity Symbol Reference Table

Common	Uncommon	Rare	Ultra Rare
•	♦	★	☆

Initial Value Reference Table**Base set**

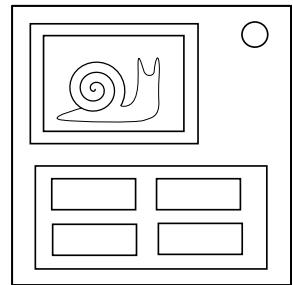
Monsplode™	XX	X#	#X	##		Monsplode™	XX	X#	#X	##
Aluga	2	3	4	2		Magmy	4	3	2	3
Asteran	2	5	2	2		Melbor	2	4	4	3
Bob	2	4	2	5		Mountoise	2	4	3	3
Buhar	5	2	2	3		Myrchat	2	2	4	3
Caadarim	2	4	3	2		Nibs	3	3	2	4
Clondar	3	2	4	5		Percy	3	3	2	4
Cutie Pie	2	4	2	4		Pouse	2	3	3	3
Docspplode	2	4	2	5		Ukkens	4	2	3	3
Flaurim	2	3	4	2		Vellarim	4	2	3	2
Gloorim	5	2	2	2		Violan	3	4	2	2
Lanaluff	2	3	4	3		Zapra	3	4	2	3
Lugirit	3	3	3	2		Zenlad	4	2	2	4

Heroes expansion

Monsplode™	XX	#X	X#	##		Monsplode™	XX	#X	X#	##
Aluga, The Fighter	6	4	5	3		Buhar, The Protector	6	5	3	4
Bob, The Ancestor	5	6	4	4		Melbor, The Web Bug	4	4	4	6

On the Subject of Monsplode, Fight!

Are you still a fan of some animated series from your childhood? It looks like you stumbled upon another fan.



- You encountered a wild Monsplode™.
- You can perform 4 different moves against it.
- Pick a move to deal the highest possible net damage to the opposing Monsplode™.
- A wrong move will incur a strike and the module will reset.
- Each move has a type, damage, and sometimes a special rule. ([Special rules can override earlier information.](#))
- Each Monsplode™ also has a type, and a special rule.
- Net damage of a move is its base damage multiplied by the type advantage/disadvantage multiplier.

Monsplode™	Name	Type	Special Rules
	Buhar	WATER	Takes no damage from ROCK type moves.
	Lanaluff	NORMAL	If its name has a common letter with the serial, takes +3 net damage from POISON type moves.
	Bob	NORMAL	If there is a lit BOB indicator, only takes damage from NORMAL type moves.
	Mountoise	ROCK	Its type is NORMAL if the bomb has a strike.
	Nibs	NORMAL	Takes no damage from GRASS type moves.

Monsplode™	Name	Type	Special Rules
	Aluga	NORMAL	Takes +2 net damage from FIRE type moves. Takes -1 net damage from WATER type moves.
	Lugirit	GHOST	Takes +2 net damage from WATER type moves. Takes -1 net damage from FIRE type moves.
	Caadarim	NORMAL	If there is at least one port, takes no damage from NORMAL type moves.
	Vellarim	WATER	If there is a Parallel port, takes no damage from NORMAL type moves.
	Flaurim	FIRE	If there is a Serial port, takes no damage from NORMAL type moves.
	Gloorim	DARK	If there is a DVI-D port, takes no damage from NORMAL type moves.
	Melbor	DARK	If net damage of a move is exactly 6 or 8, it takes 0 damage instead.
	Clondar	ELECTR	Takes +3 net damage from WATER type moves.
	Docspplode	NORMAL	"Boom" will explode Docspplode instead of the bomb. It must be used if it's present.

Monsplode™	Name	Type	Special Rules
	Magmy	FIRE	If there are less than 3 batteries on the bomb, its type is ROCK.
	Pouse	ELECTR	If net damage of a move is 6 or more, it takes 0 damage instead.
	Ukkens	POISON	Takes no damage from WATER type moves.
	Asteran	GRASS	If there is a CAR indicator present, its type is WATER.
	Violan	GRASS	If there is a CLR indicator present, its type is WATER.
	Zenlad	GRASS	Takes +3 damage from ELECTR type moves.
	Zapra	ELECTR	If there is less than 3 batteries on the bomb, its type is NORMAL.
	Myrchat	POISON	If there is no lit indicator on the bomb, its type is DARK.
	Percy	WATER	Percy can't stand silliness. You must use "Splash" if it's present.
	Cutie Pie	NORMAL	Cutie Pie is a friend! Deal the lowest possible damage instead.

Move Name	Move Type	Base Damage	Special Rules
Appearify	NORMAL	4	Damage is 10 if the opponent is a DARK type.
Battery Power	ELECTR	0	Add 2 damage for each battery on the bomb.
Bedrock	ROCK	0	Damage is number of modules on the bomb.
Boo	GHOST	0	Add 3 damage for each '0' or '0' in the serial number.
Boom	FIRE	0	Pressing this will detonate the bomb.
Bug Spray	POISON	2	Damage is 10 against Melbor and Zenlad.
Countdown	POISON	0	Damage is time left on the bomb in minutes, rounded down.
Dark Portal	DARK	0	Damage is the number of ports present.
Fiery Soul	FIRE	0	Damage is number of batteries multiplied by the number of battery holders.
Finale	GRASS	2	Damage is 10 if all other modules are disarmed before this one.
Freak Out	GHOST	1	Damage is 5 if there is a "FRK" or "FRQ" indicator. 10 if any of them are lit.
Glyph	NORMAL	0	Damage is letter count of the opponent's name.
Last Word	GHOST	0	Damage is last digit of the serial number.
Sendify	NORMAL	2	Damage is 10 if the opponent is a ROCK or GRASS type.
Shock	ELECTR	3	Damage is 8 if there is an RJ-45 port on the bomb.
Shrink	NORMAL	0	Damage is the smallest digit of the serial number.
Sidestep	NORMAL	0	Damage is the letter count of the move displayed to the left or right of this move on the module.
Stretch	NORMAL	0	Damage is the largest digit of the serial number.
Void	DARK	2	Damage is 10 if no other module is disarmed before this one.
Defuse	???	???	Defuses the module.

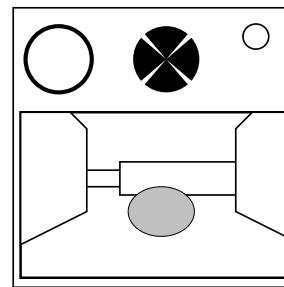
Move Name	Move Type	Base Damage		Move Name	Move Type	Base Damage
Candle	FIRE	2		Spectre	GHOST	5
Cave In	ROCK	3		Splash	WATER	0
Double Zap	ELECTR	4		Tac	NORMAL	5
Earthquake	ROCK	5		Tangle	GRASS	2
Flame Spear	FIRE	6		Tic	NORMAL	3
Fountain	WATER	6		Toe	NORMAL	1
Grass Blade	GRASS	4		Torchlight	FIRE	4
Heavy Rain	WATER	4		Toxic Waste	POISON	5
High Voltage	ELECTR	6		Venom Fang	POISON	3
Hollow Gaze	DARK	4		Zap	ELECTR	2
Ivy Spikes	GRASS	6		-	-	-

Opposing Type →	N O R M A L	P O I S O N	R O C K	G H O S T	F I R E	W A T E R	G R A S S	E L E C T R	D A R K
Move Type ↓									
NORMAL	x1	x1	x1/2	x0	x1	x1	x1	x1	x1
POISON	x1	x1/2	x1/2	x1/2	x1	x1	x2	x1	x1
ROCK	x1	x1	x1	x1	x2	x1	x1	x1	x1
GHOST	x0	x1	x1	x2	x1	x1	x1	x1	x1/2
FIRE	x1	x1	x1/2	x1	x1/2	x1/2	x2	x1	x1
WATER	x1	x1	x2	x1	x2	x1/2	x1/2	x1	x1
GRASS	x1	x1/2	x2	x1	x1/2	x2	x1/2	x1	x1
ELECTR	x1	x1	x1	x1	x1	x2	x1/2	x1/2	x1
DARK	x1	x1	x1	x2	x1	x1	x1	x1	x1/2

On the Subject of the Mouse In The Maze

Inside some bombs is a mouse that is remote-controlled via a chip in its spinal cord.

- The mouse is located inside one of the following mazes.
- The mouse can move forward or backward or turn left or right.
- To disarm the module, navigate the mouse to the accepting position and press the circular button with the labyrinth.
- Pressing the button at any other location causes a strike.
- The accepting position is marked with one of four colored spheres. Which one depends on the color of the torus in the middle of the maze, according to the table below.

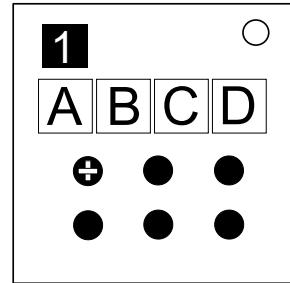


Maze	Torus color	Sphere color	Maze	Torus color	Sphere color
	green	blue		white	yellow
	blue	white		green	green
	white	green		blue	white
	yellow	yellow		yellow	blue
Maze	Torus color	Sphere color	Maze	Torus color	Sphere color
	green	blue		yellow	yellow
	blue	yellow		blue	green
	white	green		green	white
	yellow	white		white	blue
Maze	Torus color	Sphere color	Maze	Torus color	Sphere color
	white	yellow		green	yellow
	green	white		blue	green
	blue	green		white	blue
	yellow	blue		yellow	white
Maze	Torus color	Sphere color	Maze	Torus color	Sphere color
	white	yellow		green	yellow
	green	white		blue	green
	blue	green		white	blue
	yellow	blue		yellow	white

On the Subject of The Screw

You know what? Screw this module...

- The Screw module has 4 buttons with labels A, B, C, and D.
- 6 holes with colored outlines are located below the buttons.
- The buttons' functions change based on which hole the screw is in.
- Pressing an incorrect button will incur a strike. However, screwing a screw into the wrong hole will not immediately incur a strike, you can change the screw position safely before you press a button.
- Buttons neither advance towards solving the module nor give a strike if a screw is not inserted into any of the holes.
- At the start of the bomb, the screw is always in the top left hole.
- To complete a stage, you must remove the screw from the current hole, screw it into the next correct hole, then press the correct button.
- The screen at the top left corner of the module shows the current stage of the module.
- Once three stages have been solved, the module will disarm.



Firstly, determine which color hole the screw must go into.

- The colored outlines are numbered in reading order from 1-6.
- The first stage's hole position is determined by the number of batteries plus amount of unlit indicators.
- The second stage's hole position is determined by the rightmost digit in the serial number plus amount of lit indicators.
- The third stage's hole position is determined by the number of ports plus amount of battery holders.
- If the correct hole was already taken up by the screw in the previous stage, the correct hole is actually the next hole in numeric order.
- If a value is 7 or greater, subtract 6 until the value is between 1-6. If a value is 0, the actual value is 1.

Secondly, determine which button must be pressed to progress using the following tables:

Outline color is red, yellow, or green:

If the hole is in the top row:

- If the hole's position in the row is equal to the number of battery holders, press the button in the fourth position.
- Otherwise, if the letter A is in the first or third position, press the button labeled C.
- Otherwise, if the bomb has indicators CLR, FRK, or TRN, press the button in the third position.
- Otherwise, if the hole shares the same row as the blue hole, press the button in the first position.
- Otherwise, press the button labeled B.

If the hole is in the bottom row:

- If the hole's position in the row is equal to the number of port types, press the button in the second position.
- Otherwise, if the hole's position in the row is equal to the number of batteries, press the button labeled D.
- Otherwise, if the hole is not vertically opposite to the white hole, press the button labeled A.
- Otherwise, if the hole is horizontally adjacent to the magenta hole, press the button labeled C.
- Otherwise, press the button in the first position.

Outline color is blue, magenta, or white:

If the hole is in the top row:

- If the hole's position in the row is equal to the number of port types, press the button labeled D.
- Otherwise, if the letter C is in the second or fourth position, press the button labeled B.
- Otherwise, if the bomb has indicators CAR, FRQ, or SND, press the button in the fourth position.
- Otherwise, if the hole shares the same row as the red hole, press the button in the second position.
- Otherwise, press the button labeled A.

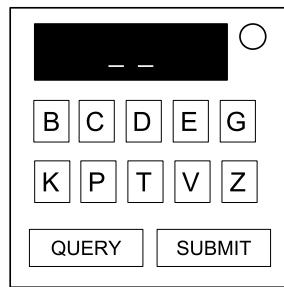
If the hole is in the bottom row:

- If the hole's position in the row is equal to the number of port plates, press the button in the second position.
- Otherwise, if the hole's position in the row is equal to the total number of indicators, press the button labeled A.
- Otherwise, if the hole is horizontally adjacent to the yellow hole, press the button labeled C.
- Otherwise, if the hole is not vertically opposite to the green hole, press the button labeled D.
- Otherwise, press the button in the fourth position.

On the Subject of Two Bits

This poorly programmed lookup device is as maddening with its slow responses as it is unforgiving with ill-timed inputs. Patience required.

Query a series of two-letter codes to track down the correct answer before submitting it. This primitive lookup machine is intolerant to incomplete and excessive inputs, as well as any input while it is busy.



Step 1: Determine Initial Code

If the serial number contains a letter, use the leftmost letter's numeric position in the alphabet as your base value (e.g. A=1, B=2). For no letters, use 0.

Add the last digit of the serial number multiplied by the number of batteries present.

If there is a Stereo RCA port present, double the current value.*

This value** is now the current code.

* Note: Skip this step if there is also an RJ45 port present.

** Note: Use the last two digits if the value is greater than 99. Prepend with a zero if less than 10.

Step 2: Determine character pair and Perform Query

Using the current code, look up the character pair. Enter that pair into the device and press "Query".

	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9
0-	kb	dk	gv	tk	pv	kp	bv	vt	pz	dt
1-	ee	zk	ke	ck	zp	pp	tp	tg	pd	pt
2-	tz	eb	ec	cc	cz	zv	cv	gc	bt	gt
3-	bz	pk	kz	kg	vd	ce	vb	kd	gg	dg
4-	pb	vv	ge	kv	dz	pe	db	cd	td	cb
5-	gb	tv	kk	bg	bp	vp	ep	tt	ed	zg
6-	de	dd	ev	te	zd	bb	pc	bd	kc	zb
7-	eg	bc	tc	ze	zc	gp	et	vc	tb	vz
8-	ez	ek	dv	cg	ve	dp	bk	pg	gk	gz
9-	kt	ct	zz	vg	gd	cp	be	zt	vk	dc

Step 3: Repeat and Submit

The response code from the device from the query in Step 2 is now your current code. Perform Step 2 an additional 2 times, using the new code each time.

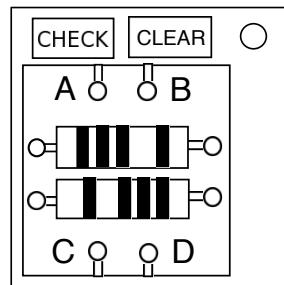
After receiving the response code from the final query, look up the corresponding character pair, enter the pair into the device and press "Submit".

On the Subject of Resistors

"It is easier to resist at the beginning than at the end."

- Leonardo da Vinci, on procrastination

The module contains 2 input pins (**A** and **B**), 2 resistors, and 2 output pins (**C** and **D**). Follow the rules to make the correct connections. To make a connection, click one pin and then another. Press **CLEAR** to remove all connections.



1. Take the first digit of the bomb's serial number (or 0 if there are no digits).
The *primary input* is **A** if even, **B** if odd.

2. Take the last digit of the bomb's serial number (or 0 if there are no digits).
The *primary output* is **C** if even, **D** if odd.

3. The *target resistance* in Ω is calculated as follows:

1. Take the first two digits of the bomb's serial number.

e.g. **2E7X19** \rightarrow 27, **ZJ3MLN** \rightarrow 3, **ABCDEF** \rightarrow 0

2. For each battery present on the bomb (up to a max of 6), multiply by 10.

4. Connect the primary input to the primary output, with the target resistance.

Note: all resistance values are checked to be within 5% accuracy.

5. If a lit **FRK** indicator is present, also connect the primary input to the other (secondary) output, with the target resistance.

Note: this means C and D will also be connected with some non-infinite resistance. This value is not checked as part of your solution, and so can be anything.

6. If step 5 did not apply and at least 1 **D cell** battery is present, connect the secondary input to the secondary output, with 0Ω resistance.

7. Press **CHECK** when finished to check the solution. All input/output pairs not mentioned should be disconnected.

Consult the following page to learn how to produce the target resistance.

Producing resistance

An input and output can be connected via one of five paths.

1. **No resistors**, 0Ω of resistance.

2. **Top resistor**.

3. **Bottom resistor**.

4. **Both resistors in serial**.

i.e. input → top resistor → bottom resistor → output

The combined resistance is the sum of the individual resistances.

5. **Both resistors in parallel**.

i.e. input → top resistor, input → bottom resistor,
top resistor → output, bottom resistor → output

The combined resistance is less than either of the individual resistances.

For the curious... it's: $1 / (1 / (\text{top resistance}) + 1 / (\text{bottom resistance}))$

Don't worry, this won't be on the test!

Reading resistors

Each resistor has a sequence of three colored bands, indicating a two-digit number and a multiplier. A fourth band indicates a tolerance value (not used). The fourth band is separated by a gap from the first three. Resistors can be rotated; take care to read the bands in the correct direction.

Color	First Band	Second Band	Multiplier
Black	0	0	1Ω
Brown	1	1	10Ω
Red	2	2	100Ω
Orange	3	3	$1,000\Omega$
Yellow	4	4	$10,000\Omega$
Green	5	5	$100,000\Omega$
Blue	6	6	$1,000,000\Omega$
Violet	7	7	$10,000,000\Omega$
Gray	8	8	—
White	9	9	—
Gold	—	—	0.1Ω
Silver	—	—	0.01Ω

For example, **Green Violet Yellow** indicates $57 \times 10,000\Omega = 570,000\Omega$.

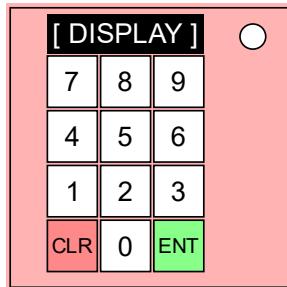
On the Subject of Number Pads

Try putting in 0000. No? Try 0001. Still not working? We might be here for a while...

See Appendix A for indicator identification reference.

See Appendix B for battery identification reference.

See Appendix C for port identification reference.



- Enter a 4-digit code using the numbered buttons.
- Press the green button labelled ENT to submit the entered code.
- Press the red button labelled CLR to discard the entered code.
- Perform the first action that applies on each level.
- The CLR and ENT buttons' colors are to be ignored.

Using the wheel chart, starting from the center, pick a path by following the instructions below for each level you are on. (center level is 1, next one out is 2, etc.) Each path you take is the code digit corresponding to its level number unless contradicted by higher levels' instructions. Follow the final instructions after you complete all four levels.

On the first level, the paths are in order from the upper-right corner going clockwise. On the rest of the levels, they are also in clockwise order.

Level 1:

If three or more of the numbered buttons are colored yellow, take the first path. If the all three of the numbered buttons 4, 5, and 6 are colored white, blue, or red, take the second path.

If the serial number contains a vowel, take the third path.

Otherwise, take the fourth path.

Level 2:

If there are at least two blue numbered buttons and at least three green buttons, take the first path.

If the numbered button 5 isn't blue nor white, take the second path.

If there are less than two ports on the bomb, take the third path.

Otherwise, take the fourth path, and if the top row of buttons contains a green button, subtract 1 from the first digit (if it's 0, it becomes 9).

Level 3:

If there are more than two white numbered buttons and more than two yellow numbered buttons, take the first path.

Otherwise, take the second path and reverse the current 3-digit code.

Level 4:

If there are 2 or less yellow numbered buttons, take the first path and add 1 to each digit (if a digit is 9, it becomes 0).

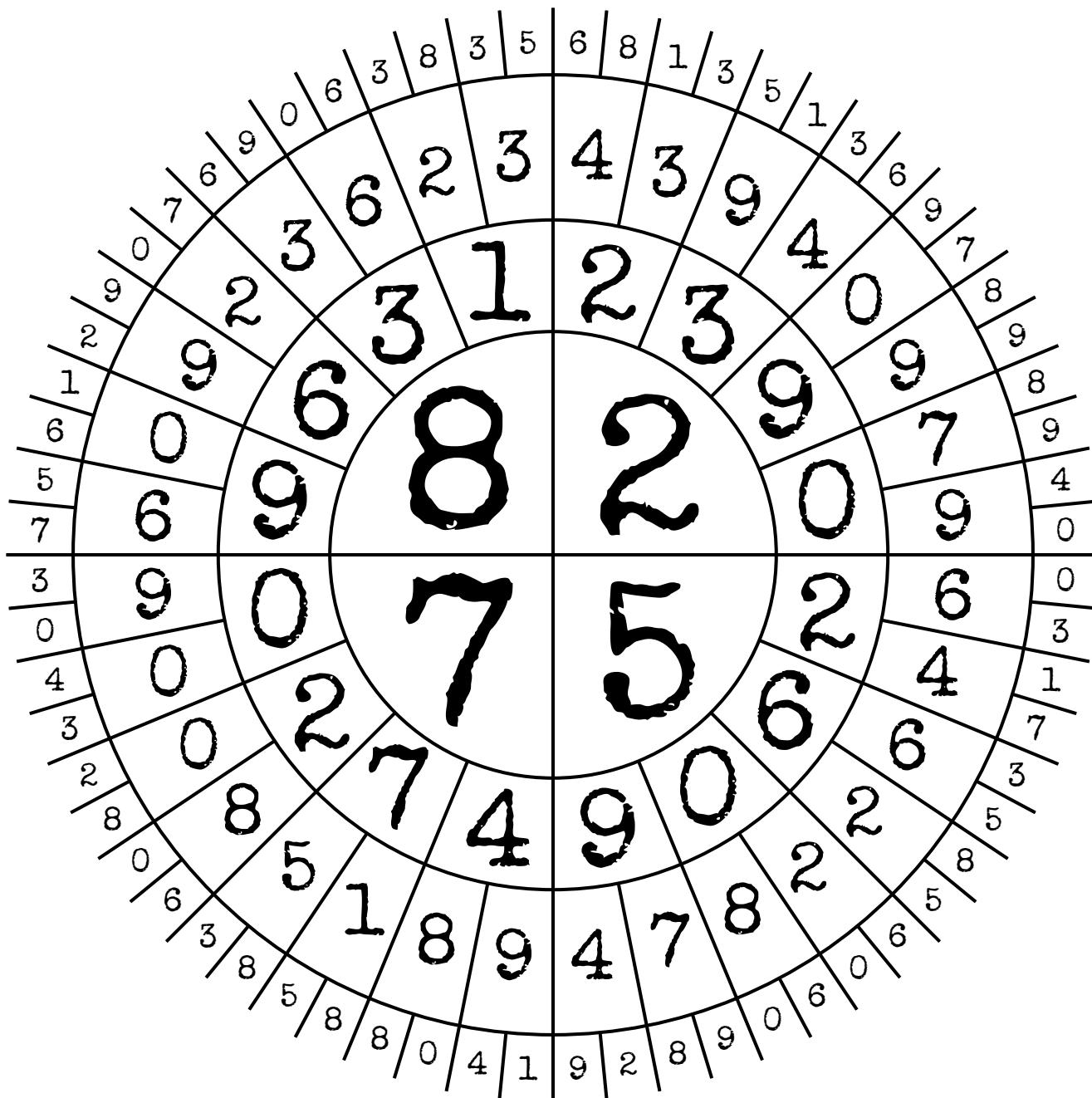
Otherwise, take the second path.

Final Instructions:*(follow all instructions in this order)*

If the last digit of the serial number is even, swap the first and third digits.

If there are an odd number of batteries, swap the second and third digits.

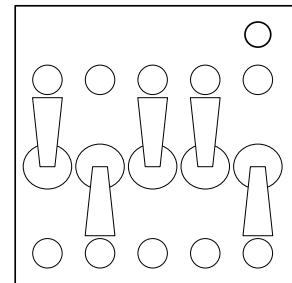
If both criteria above are not met, swap the first and fourth digits.

Finally, if the sum of all the digits in the code is even, reverse the code.**Wheel Chart**

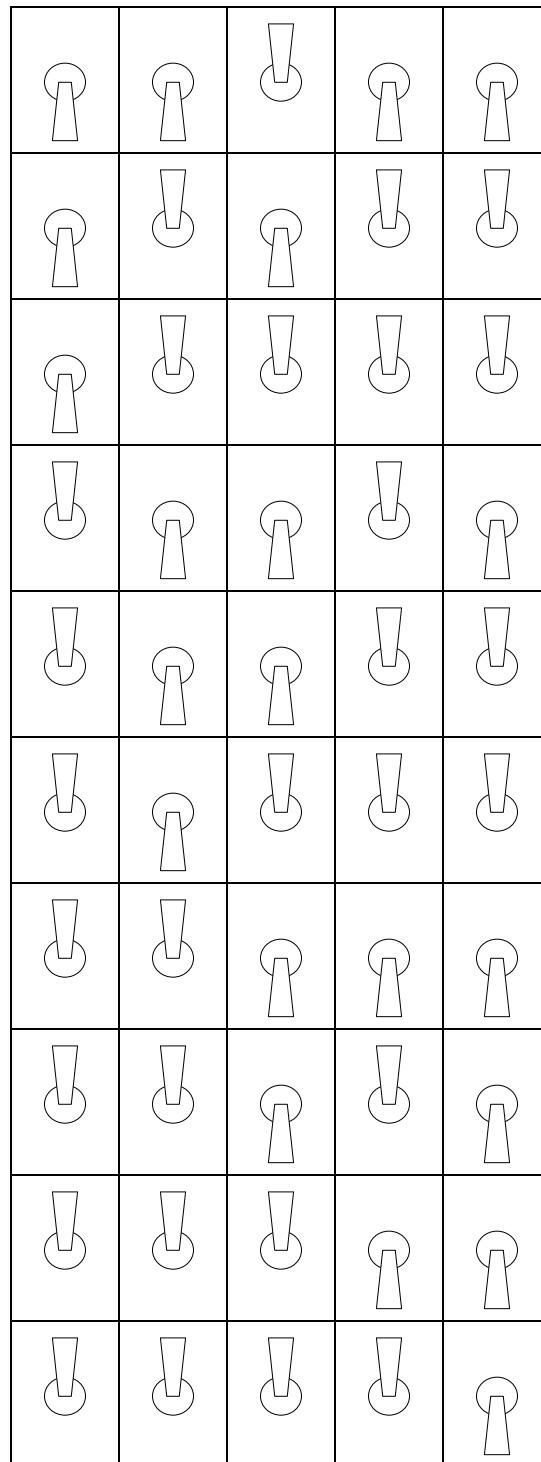
On the Subject of Switches

A yes or no choice isn't too bad. Unfortunately you have to make five of them and any of them could be your last.

Switches need to be flipped to match the lit indicators either above or below them.



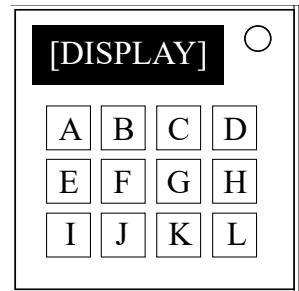
Avoid the following switch states:



On the Subject of Caesar Cipher

Communication was dangerous back in the days. Can you figure out what the original message was?

Decipher the characters on the display with the help of Caesar's tactics. There's no delete button, so press those buttons carefully!



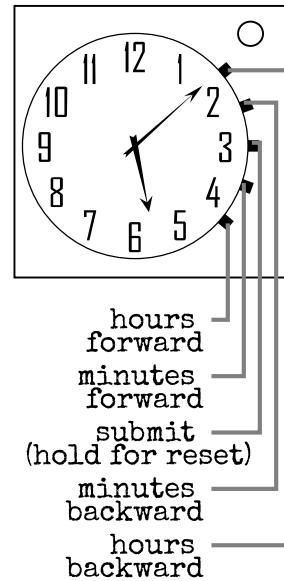
For example: if the offset is -2, **D** becomes **B** and **L** becomes **J**. The table below can be used to calculate the required offset. If the offset column contains an = sign, that value should be used, regardless of other rules that apply.

Condition	Offset
Serial number contains a vowel	-1
Number of batteries	+1 per battery
The last digit of the serial number is even	+1
Indicator with label CAR is present	+1
Parallel port and lit indicator with label NSA is present	=0

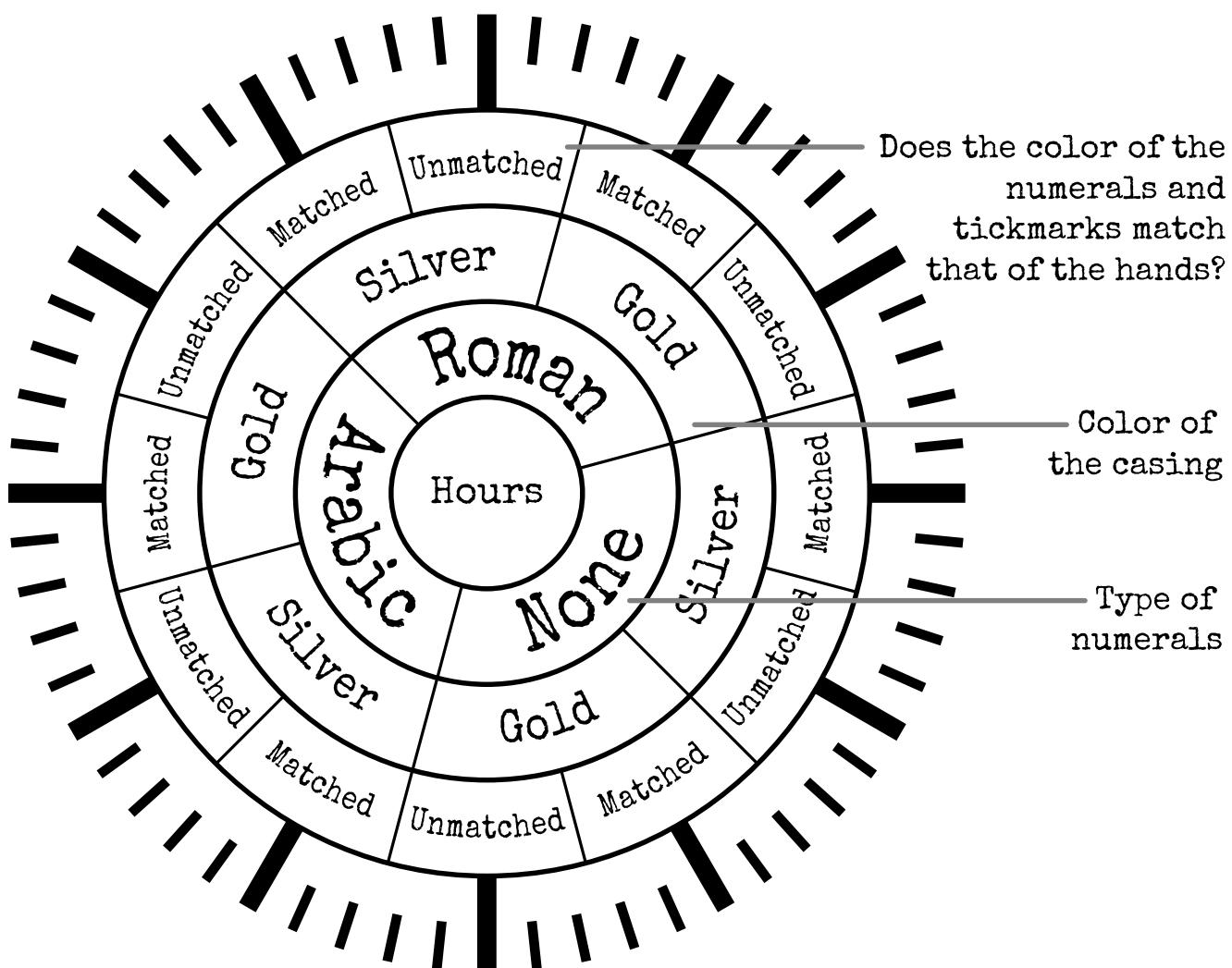
On the Subject of The Clock

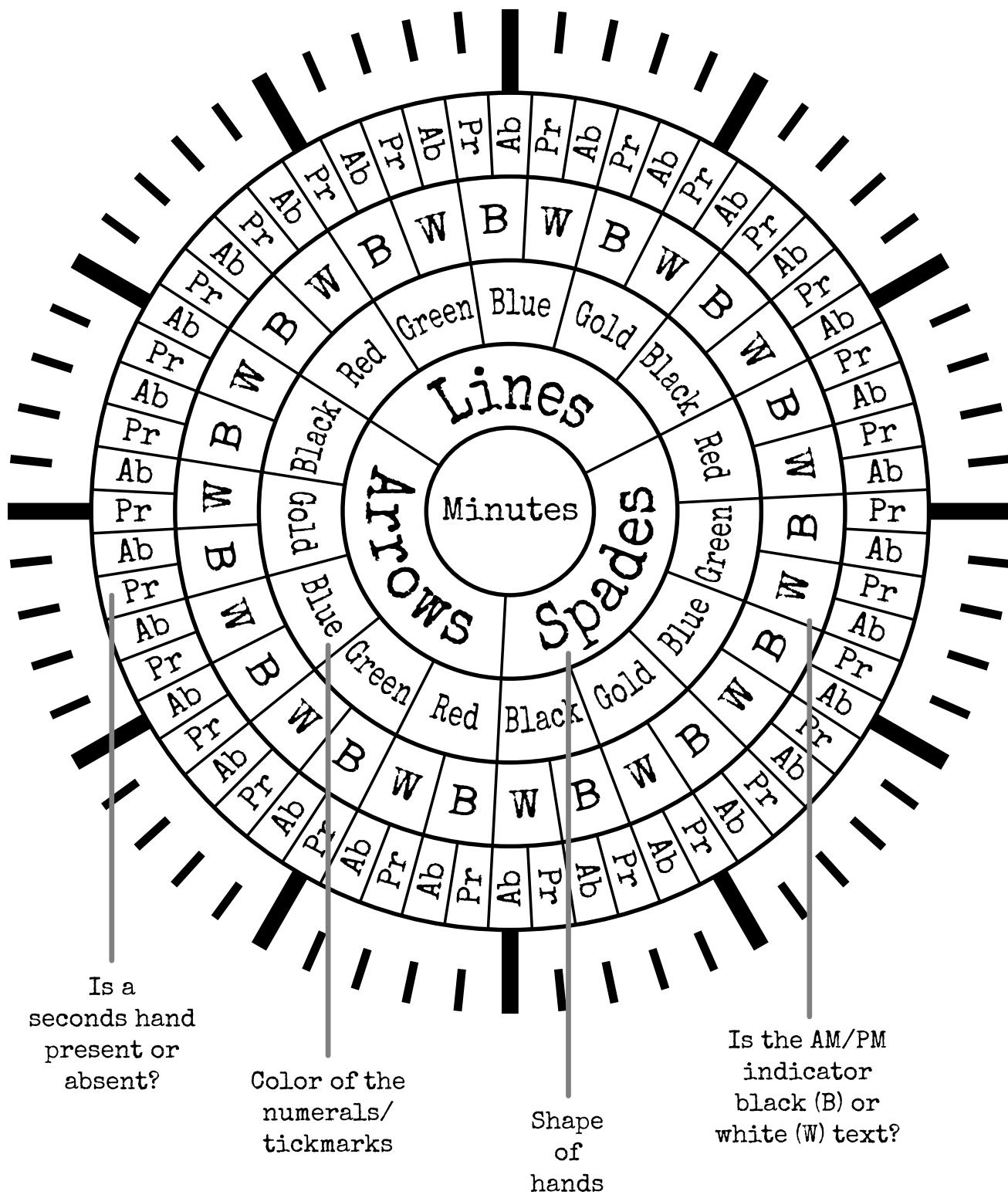
Tick-tock... as if you needed more reminding that time is running out.

- The clock on the module displays a time.
- The circular charts below simulate a clock face. Using the features of the clock on the module, find a straight line through all the correct categories on each chart to determine a second time.
- If more than half of the bomb's original time limit is displayed on the digital countdown timer, add the determined time to the current time displayed on the module. Otherwise, subtract it instead.
- Adjust the clock to the resulting time and press the submit button to set the clock and disarm the module. Setting an incorrect time results in a strike and a new initial time will be displayed.



NOTE: Remember to switch between AM and PM if necessary.

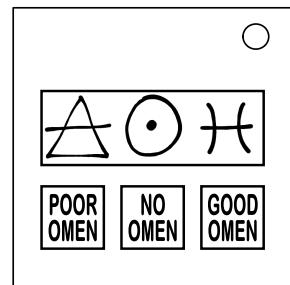




On the Subject of Astrology

Sometimes, the stars have it out for you. Is this bomb a good or a poor omen?

- Your fortune reading consists of the alchemical symbols of a classical element, a celestial body, and a zodiac sign.
- Calculate the Omen score of this reading:
- For each pair of symbols, look up their relationship value in the tables below, and add to the Omen score.
- For each symbol, if the English name of the symbol has a letter in common with the serial number of the bomb, add 1 to the Omen score.
- Subtract 1 from the Omen score for each symbol without a letter in common with the serial number.
- If the Omen score is positive, press GOOD OMEN anytime the number of the Omen score is a digit in the timer.
- If the Omen score is negative, press POOR OMEN anytime the number of the Omen score is a digit in the timer.
- If the Omen score is 0, press NO OMEN at any time.



	○	☽	♀	♀	♂	‡	☿	✚	Ψ	♀
△	0	0	1	-1	0	1	-2	2	0	-1
▽	-2	0	-1	0	2	0	-2	2	0	1
▽▽	-1	-1	0	-1	1	2	0	2	1	-2
△△	-1	2	-1	0	-2	-1	0	2	-2	2

	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♓
△	1	0	-1	0	0	2	2	0	1	0	1	0	
▽	2	2	-1	2	-1	-1	-2	1	2	0	0	2	
▽△	-2	-1	0	0	1	0	1	2	-1	-2	1	1	
△△	1	1	-2	-2	2	0	-1	1	0	0	-1	-1	

	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	♓
●	-1	-1	2	0	-1	0	-1	1	0	0	-2	-2	
☽	-2	0	1	0	2	0	-1	1	2	0	1	0	
♀	-2	-2	-1	-1	1	-1	0	-2	0	0	-1	1	
♀	-2	2	-2	0	0	1	-1	0	2	-2	-1	1	
♂	-2	0	-1	-2	-2	-2	-1	1	1	1	0	-1	
‡	-1	-2	1	-1	0	0	0	1	0	-1	2	0	
ℏ	-1	-1	0	0	1	1	0	0	0	0	-1	-1	
♓	-1	2	0	0	1	-2	1	0	2	-1	1	0	
↑Ψ	1	0	2	1	-1	1	1	1	0	-2	2	0	
♀	-1	0	0	-1	-2	1	2	1	1	0	0	-1	

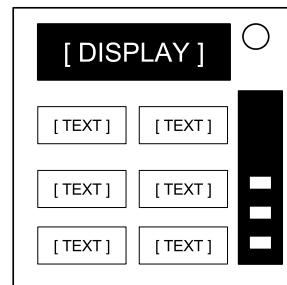
<u>Symbol</u>	<u>Element</u>	<u>Symbol</u>	<u>Planet</u>	<u>Symbol</u>	<u>Planet</u>
	Fire		Sun		Jupiter
	Water		Moon		Saturn
	Earth		Mercury		Uranus
	Air		Venus		Neptune
			Mars		Pluto

<u>Symbol</u>	<u>Zodiac</u>	<u>Symbol</u>	<u>Zodiac</u>	<u>Symbol</u>	<u>Zodiac</u>
	Aries		Leo		Sagittarius
	Taurus		Virgo		Capricorn
	Gemini		Libra		Aquarius
	Cancer		Scorpio		Pisces

On the Subject of Third Base

This module is identical to Who's On First, except with four characters on each button instead of confusing words and phrases. This should be easy... right?

1. Read the display and use step 1 to determine which button label to read.
2. Using this button label, use step 2 determine which button to push.
3. Repeat until the module has been disarmed.



Step 1:

Based on the display, read the label of a particular button and proceed to step 2:

NHXS
eye

IH6X
eye

XI8Z
eye

I809
eye

XOHZ
eye

H68S

80XN

Z8IX

SXHN

6NZH

H6SI

608I

NX08

66I8

S89H

SNZX

9NZS

8I99

ZHOX

SI9X

SZN6

ZSN8

HZN9

X9HI

IS9H

XZNS

X6IS

8NSZ

Step 2:

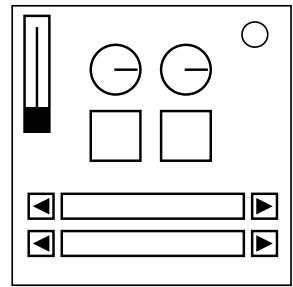
Using the label from step 1, push the first button that appears in its corresponding list:

"XI8Z":	NHXS, I809, XOHZ, 608I, 6NZH, 66I8, H6SI, Z8IX, XI8Z, SXHN, H68S, 80XN, IH6X, NX08
"H68S":	6NZH, I809, NHXS, 608I, SXHN, H6SI, IH6X, 80XN, NX08, XI8Z, Z8IX, XOHZ, 66I8, H68S
"SXHN":	Z8IX, 80XN, NX08, H68S, XOHZ, XI8Z, H6SI, NHXS, IH6X, 6NZH, 66I8, I809, SXHN, 608I
"Z8IX":	NX08, H6SI, I809, 608I, Z8IX, 66I8, XI8Z, IH6X, SXHN, XOHZ, 6NZH, 80XN, NHXS, H68S
"IH6X":	80XN, H6SI, I809, 608I, NHXS, Z8IX, SXHN, 66I8, 6NZH, XOHZ, NX08, H68S, IH6X, XI8Z
"NHXS":	I809, H6SI, 80XN, 608I, H68S, XOHZ, 66I8, XI8Z, IH6X, NHXS, 6NZH, Z8IX, SXHN, NX08
"XOHZ":	80XN, XOHZ, 6NZH, IH6X, XI8Z, Z8IX, 608I, SXHN, I809, H68S, NX08, NHXS, 66I8, H6SI
"80XN":	XI8Z, IH6X, 6NZH, XOHZ, I809, NHXS, H6SI, SXHN, 66I8, Z8IX, 80XN, 608I, NX08, H68S
"6NZH":	H6SI, 6NZH, H68S, SXHN, 608I, NHXS, Z8IX, XOHZ, 80XN, NX08, 66I8, XI8Z, I809, IH6X
"H6SI":	NHXS, IH6X, XI8Z, 66I8, SXHN, NX08, XOHZ, H6SI, 608I, 6NZH, 80XN, Z8IX, I809, H68S
"608I":	Z8IX, XI8Z, I809, XOHZ, IH6X, 66I8, SXHN, NX08, 6NZH, 608I, H6SI, H68S, 80XN, NHXS
"I809":	608I, SXHN, H68S, NHXS, 80XN, IH6X, NX08, I809, 6NZH, XI8Z, Z8IX, 66I8, XOHZ, H6SI
"NX08":	80XN, SXHN, Z8IX, I809, NHXS, 6NZH, H68S, 66I8, XOHZ, NX08, IH6X, XI8Z, H6SI, 608I
"66I8":	H6SI, 608I, NHXS, XI8Z, 66I8, I809, IH6X, 80XN, Z8IX, 6NZH, H68S, XOHZ, SXHN, NX08
"9NZS":	8NSZ, 8I99, ZHOX, HZN9, IS9H, SNZX, SZN6, XZNS, SI9X, 9NZS, ZSN8, X6IS, X9HI, S89H
"8I99":	ZHOX, IS9H, X6IS, SNZX, SI9X, X9HI, ZSN8, XZNS, 9NZS, S89H, HZN9, 8NSZ, SZN6, 8I99
"ZHOX":	ZSN8, 8I99, SNZX, ZHOX, IS9H, SZN6, 8NSZ, S89H, HZN9, 9NZS, SI9X, XZNS, X6IS, X9HI
"HZN9":	9NZS, HZN9, SZN6, IS9H, ZSN8, 8I99, S89H, ZHOX, SI9X, SNZX, 8NSZ, X9HI, X6IS, XZNS
"SZN6":	X9HI, S89H, SZN6, SNZX, SI9X, 8NSZ, ZHOX, XZNS, HZN9, X6IS, IS9H, ZSN8, 8I99, 9NZS
"S89H":	SNZX, 8NSZ, IS9H, SI9X, HZN9, SZN6, ZSN8, X9HI, S89H, 9NZS, X6IS, XZNS, 8I99, ZHOX
"SNZX":	SNZX, ZHOX, 8I99, 9NZS, X9HI, XZNS, ZSN8, IS9H, 8NSZ, X6IS, HZN9, S89H, SI9X
"ZSN8":	SZN6, S89H, 8I99, HZN9, IS9H, ZSN8, X9HI, 9NZS, SNZX, X6IS, ZHOX, 8NSZ, XZNS, SI9X
"SI9X":	9NZS, XZNS, HZN9, ZHOX, S89H, X9HI, ZSN8, X6IS, 8I99, SNZX, SZN6, IS9H, SI9X, 8NSZ
"X9HI":	8NSZ, SNZX, IS9H, SI9X, ZHOX, SZN6, HZN9, XZNS, X6IS, 9NZS, S89H, 8I99, ZSN8, X9HI
"IS9H":	SI9X, SNZX, ZSN8, ZHOX, XZNS, 8NSZ, IS9H, X6IS, X9HI, 8I99, SZN6, HZN9, S89H, 9NZS
"XZNS":	8I99, S89H, X9HI, ZSN8, 9NZS, SZN6, 8NSZ, SI9X, HZN9, IS9H, XZNS, SNZX, ZHOX, X6IS
"8NSZ":	8I99, X9HI, X6IS, HZN9, 9NZS, XZNS, SNZX, SZN6, 8NSZ, S89H, SI9X, IS9H, ZHOX, ZSN8
"X6IS":	HZN9, IS9H, S89H, SZN6, XZNS, X9HI, ZSN8, SI9X, SNZX, 9NZS, X6IS, 8NSZ, 8I99, ZHOX

On the Subject of Laundry

Sorting and folding are the least of your worries.

All the messes from the previous explosions must be cleaned up. Using the Laundry Symbol Reference L4UHDR9 and the rules below, determine the correct setting on the machine panel. Once satisfied, insert a coin. On error, a sock will be lost, and a strike gained.



Determine the piece of clothing that has to be cleaned with the tables below. For all values higher than 5, subtract 6 from the total until the new number is less than 6. For all negative values, add 6 until you have a value between 0-5.

- The **Clothing Item** (table L41) is determined by the number of unsolved modules (excluding needy modules) + total amount of indicators.
- The **Item Material** (table L42) is determined by the total number of ports + the number of solved modules - battery holders.
- The **Item Color** (table L43) is determined by the last digit of serial number + batteries.

Use washing instructions based on the material, drying instructions based on the color, and use ironing and special instructions based on the item. But, prioritize the following rules from top to bottom:

- If the color is Clouded Pearl ALWAYS use non-chlorine bleach.
- If the item is made out of leather, or in the color Jade Cluster, it can't go above 120°F. To be safe ALWAYS wash at 80°F.
- If the item is a corset or the material is corduroy then use special instructions based on material.
- If the material is wool or the color is Star Lemon Quartz ALWAYS dry with high heat.
- If a letter of the clothing material matches a letter in your serial code, then the color takes over the special instructions.
- BUT if there are exactly 4 batteries in 2 holders and a there is a lit BOB indicator, ignore all other rules. Bob did the work for you. Just throw in the coin. Thanks BOB.

Input the solution through putting The Washing Symbol top-left, The Drying top-right, Ironing on the top display and Special on the bottom display.

Table L41: Clothing Item Reference

	CLOTHING ITEM	WASHING	DRYING	IRONING	SPECIAL
0	Corset	140°F	Dry Flat	2 dots	
1	Shirt	105°F		No steam	No Tetrachlorethylene
2	Skirt	30°C	Hang To Dry		Reduced Moisture
3	Skort		Tumble Dry	3 Dots	Circle Top Left
4	Shorts	Do Not Wring	Shade	150°C	
5	Scarf	95°C	Dry		Do not Dry Clean

Table L42: Clothing Material Reference

	CLOTHING MATERIAL	WASHING	DRYING	IRONING	SPECIAL
0	Polyester	50°C	No Heat	2 dots	
1	Cotton		Medium Heat	Iron	Do Not Dry Clean
2	Wool	Handwash		390°F	Reduced Moisture
3	Nylon	30°C	Drip Dry		Low Heat
4	Corduroy	105°F		110°C	
5	Leather	Do Not Wash	Do Not Dry	Do Not Iron	

Table L43: Clothing Color Reference

	CLOTHING COLOR	WASHING	DRYING	IRONING	SPECIAL
0	Ruby Fountain	140°F		Do Not Iron	
1	Star Lemon Quartz		Dry Flat	Iron	
2	Sapphire Springs	80°F	Tumble Dry		
3	Jade Cluster	30°C		300°F	
4	Clouded Pearl		Low Heat	No steam	
5	Malinite	60°C	Medium Heat		

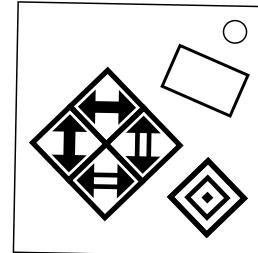
Laundry Symbol Reference

machine wash permanent press	machine wash gentle or delicate	hand wash	do not wash	30°C or 80°F	40°C or 105°F	50°C or 120°F	60°C or 140°F
70°C or 160°F	95°C or 200°F	30°C or 80°F	40°C or 105°F	50°C or 120°F	60°C or 140°F	70°C or 160°F	95°C or 200°F
do not wring	tumble dry	low heat	medium heat	high heat	no heat	hang to dry	drip dry
dry flat	dry in the shade	do not dry	do not tumble dry	dry	iron	do not iron	110°C 230°F
150°C 300°F	200°C 390°F	no steam	bleach	do not bleach	non-chlorine bleach	dryclean	any solvent
any solvent except tetrachloro- ethylene	petroleum solvent only	wet cleaning	do not dryclean	short cycle	reduced moisture	low heat	no steam finishing

On the Subject of Double-Oh

A module, please. Shaken, not stirred. Stupid piece of junk; broken display, broken buttons...

- A display is shown with a two digit number, as well as five buttons. Using the buttons, toggle the display to 00 (located in the center of the below table), then hit the submit button.
- Four of the five buttons toggle the number in the display. Based on the table below, consisting of a 3×3 grid of smaller 3×3 grids, the buttons will behave in the following fashion:
- The “↑” button moves to the next position up or down within the current smaller grid, looping if reaching the edge (example: 00 to 85 to 14 to 00)
- The “↔” button moves to the next position left or right within the current smaller grid, looping if reaching the edge (example: 00 to 56 to 21 to 00)
- The “↕” button moves to the same position in the next large 3×3 grid up or down, looping if reaching the edge (example: 00 to 22 to 58 to 00)
- The “↔” button moves to the same position in the next large 3×3 grid left or right, looping if reaching the edge (example: 00 to 44 to 65 to 00)
- The “□” button is the submit button. Pressing it will disarm the module if 00 is displayed and cause a strike otherwise.



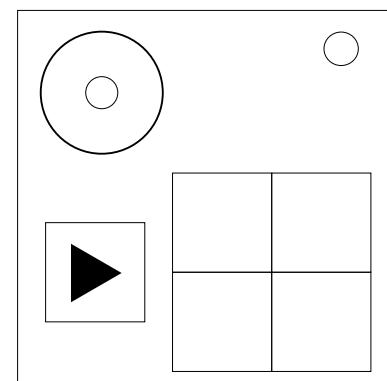
NOTE: This module is old, and the last digit glitches out when the first digit is zero. In addition, the wiring for the buttons is acting up, so the functions of the buttons may be swapped. Fortunately, the strikes from the submit button are only registered by the bomb if the displayed number is less than 10.

60	02	15	57	36	83	48	71	24
88	46	31	70	22	64	07	55	13
74	27	53	05	41	18	86	30	62
52	10	04	43	85	37	61	28	76
33	65	78	21	00	56	12	44	87
47	81	26	68	14	72	50	03	35
06	38	42	84	63	20	75	17	51
25	73	67	16	58	01	34	82	40
11	54	80	32	77	45	23	66	08

On the Subject of Listening

"Why did we send a deaf person to defuse a bomb?" – Person who is no longer alive.

Press the play button to play a sound clip through the speaker. Each sound clip has a corresponding code that contains any of the four symbols \$ * & #. Match the sound clip to the table below and enter the code via the four button keypad.



Taxi Dispatch	&&&**	Dial-up Internet	*#&*&
Cow	&\$#\$\$&	Police Radio Scanner	**###
Extractor Fan	\$#\$\$*&	Censorship Bleep	&&\$&*
Train Station	#\$\$**	Medieval Weapons	&\$**&
Arcade	\$#\$\$#*	Door Closing	#\$#&\$
Casino	**\$*#	Chainsaw	&#&&#
Supermarket	#\$\$&*	Compressed Air	\$\$*\$*
Soccer Match	##\$*\$	Servo Motor	\$&\$\$\$
Tawny Owl	\$#*\$&	Waterfall	&**\$\$
Sewing Machine	#&&*#	Tearing Fabric	\$&&*&
Thrush Nightingale	**#**	Zipper	&\$&##
Car Engine	&#**&	Vacuum Cleaner	#&\$*&
Reloading Glock 19	\$&**#	Ballpoint Pen Writing	\$*\$\$**
Oboe	&\$\$##	Rattling Iron Chain	*#\$&&
Saxaphone	\$&&**	Book Page Turning	###&\$
Tuba	#&\$##	Table Tennis	*\$\$&\$
Marimba	&*\$*\$	Squeeky Toy	\$*&##
Phone Ringing	&\$\$&*	Helicopter	#&\$&&
Tibetan Nuns	#&&&&	Firework Exploding	\$&\$\$*
Throat Singing	**\$\$	Glass Shattering	*\$*\$\$
Beach	*&*&&		

Note: pressing play also clears whatever code you have entered.

On the Subject of Translated Modules

Unfortunately, the game's pdf creation routine can't filter the manual pages for the "Translated Modules Mod" by the set language. Putting the pages for all languages in here would blow up this document (we have 80+ pages).

To get the manual you have two options:

1. For a fan translation of the complete manual with the translated module pages integrated have a look at the mod's [description page](http://steamcommunity.com/sharedfiles/filedetails/?id=850186070) (<http://steamcommunity.com/sharedfiles/filedetails/?id=850186070>) or at your mod's manual folder (see below) and open TranslatedModulesComplete(YourLanguage).pdf.
2. To integrate only the pages for the modified modules right here, navigate to the mod's manual folder (usually at "C:\Program Files (x86)\Steam\steamapps\workshop\content\341800\850186070\Manual") and copy "TranslatedModules(YourLanguage).pdf" from the "CopyManualFromHere" to the "Modules" folder.

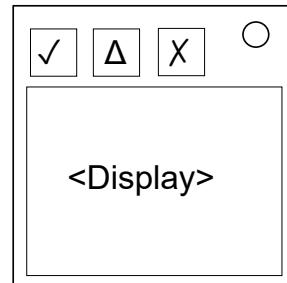
And don't forget to set the mod's language before playing:

1. Start the game with mods enabled
2. Click "Menu" => "Show Mod Settings Folder"
3. Open "TranslatedModules-settings.txt"
4. Jump to the line "CurrentLanguages": ["de"]
5. Replace "de" with the identifier for your language (you'll find all available identifiers in that file)
6. Quit and restart the game!

On the Subject of Web Design

Welcome to web design class. The first rule of web design is: You do not talk about Comic Sans MS. The second rule is: You DO NOT talk about Comic Sans MS. The third rule is: The word "color" is NEVER spelled with a U.

- The module displays a snippet of a CSS file on a screen.
- Based on the information given, you have to Accept (✓), Consider (Δ), or Reject (X) the code.



Step 1: Select the website

Find the website this code was quoted from. Use the **Selector** part of the code (the part before {) to narrow it down to one site, then note down its **Threshold** value.

<u>Edison Daily (news site)</u> Elements: body, a, h3, blockquote IDs: #header, #comments Classes: .post, .title, .author Threshold: #00FF00	<u>Buddymaker (social media)</u> Elements: div, span, img, a IDs: #msg, #cover, #content, #sidebar Classes: .post, .title, .share Threshold: #804000
<u>PNGdrop (image hosting)</u> Elements: div, img IDs: #main, #comments, #fullview Classes: .username, .share, .large Threshold: #BADA55	<u>BobIRS (chatroom)</u> Elements: ul, ol, img, b, i IDs: #sidebar Classes: .avatar, .username Threshold: #03E61E
<u>Vidhost (video hosting)</u> Elements: div, iframe, b, i IDs: #main, #rating, #comments Classes: .username, .share, .channel Threshold: #60061E	<u>Go Team Falcon online (online game)</u> Elements: body, iframe IDs: #rating, #comments Classes: .rating, .fullscreen Threshold: #501337
<u>Stufflocker (cloud storage)</u> Elements: div, h3, img, iframe IDs: #sidebar, #download Classes: .menu, .author Threshold: B020E5	<u>Steel Nexus (forum)</u> Elements: body, div, img, blockquote IDs: #header, #content, #sidebar Classes: .avatar, .reply Threshold: #BEA61E

Step 2: Find the color target

Find the first color name in the CSS file, then use the following table to determine a hexadecimal value of that color. This value is the **Color Target** that you will need later. If no color name is displayed, use #7F7F7F.

Color	Hex value	Color	Hex value	Color	Hex value
Blue	#0000FF	Yellow	#FFFF00	Red	#FF0000
Green	#00FF00	White	#FFFFFF	Orange	#FFA500
Purple	#800080	Magenta	#FF00FF	Gray	#808080

Note: The hexadecimal value of a color is denoted in #RRGGBB format.

Step 3: Calculate site score

Calculate the site score as follows:

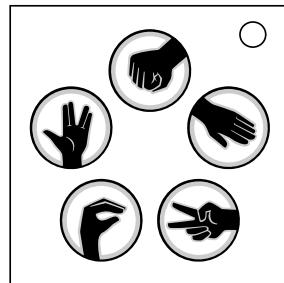
- Start with the number of lines of code inside the {curly braces}. Counting semi-colons is a good idea because it is a line terminator.
- +3 score each for:
 - R value of the Color Target is less than R value of the threshold.
 - G value of the Color Target is greater than or equal to G value of the threshold.
 - B value of the Color Target is greater than B value of the threshold.
- +2 score for each margin/padding.
- +1 score for each border/border-radius unless it's 0px or 50%.
- 1 score for each z-index without a position.
- +1 score for each font-family unless it's "Comic Sans MS", which gives a -5 score.
- +2 score for each box-shadow/text-shadow unless it's none.
- ×2 score if the buttons on the module are colored, or -3 score if they are gray.
- If your score is now negative or 0, keep adding 16 until it's positive.
- Keep adding up the digits of the number until you are left with a single digit. Then use the following table to determine which button to push.

Accept (✓)	Consider (Δ)	Reject (✗)
2, 3, 5, 7	6, 8	1, 4, 9

On the Subject of Rock-Paper-Scissors-Lizard-Spock

Anecdotal evidence suggests that in the game of Rock-Paper-Scissors, players familiar with each other will tie 75 to 80% of the time due to the limited number of outcomes. Rock-Paper-Scissors-Lizard-Spock was created by Internet pioneer Sam Kass as an improvement on the classic game. All hail Sam Kass. Hail.

To disarm this module, determine the correct signs to press.



First, determine the decoy. If the five signs are arranged in a regular pentagon, there is no decoy. Otherwise, the decoy is the one that is in the middle of the arrangement or in the middle in a line of three (horizontal, diagonal or vertical).

Next, go through the rows of the following table and determine the highest-scoring sign in each row. Stop at the first row in which there's no tie and the highest-scoring sign is not the decoy. Then press the signs on the module that beat this sign. If no row applies, press all signs except the decoy.

Which sign beats which? It's very simple. Scissors cuts paper. Paper covers rock. Rock crushes lizard. Lizard poisons Spock. Spock smashes scissors. Scissors decapitates lizard. Lizard eats paper. Paper disproves Spock. Spock vaporizes rock. And, as it always has, rock crushes scissors.

# of occurrences of:	Rock	Paper	Scissors	Lizard	Spock
serial number letter Skip this row if the serial number contains an X or Y.	R, O	P, A	S, I	L, Z	C, K
port Skip this row if a PS/2 port is present.	RJ-45	Parallel	Serial	DVI-D	Stereo RCA
lit indicator Skip this row if a lit TRN indicator is present.	FRK, FRQ	BOB, IND	CAR, SIG	CLR, NSA	SND, MSA
unlit indicator Skip this row if an unlit TRN indicator is present.	FRK, FRQ	BOB, IND	CAR, SIG	CLR, NSA	SND, MSA
serial number digit	0, 5	3, 6	1, 9	2, 8	4, 7

On the Subject of Souvenir

Something to remember your explosion by.

The module asks questions about the state of other modules that you solved prior. Answer all the questions correctly.

What you need to know:

[Question]

[Answer 1] [Answer 3]
[Answer 2] [Answer 4]

Module	Information required
3D Maze	What were the markings? What was the cardinal direction?
3D Tunnels	What were the goal symbols?
Adventure Game	Which correct items did you use? Which enemy were you fighting?
Alchemy	What was the center symbol at the start of the last successful brew?
Algebra	What were the first two equations?
Big Circle	Which colors were in the solution?
Binary LEDs	At which numeric value did you cut the correct wire?
Bitmaps	How many pixels were black/white in each quadrant?
Braille	What was the final solution word?
Broken Buttons	What were the correct buttons you pressed?
The Bulb	What were the correct button presses?
Burglar Alarm	What were the displayed digits?
Button Sequences	How many times did each color occur?
Calendar	What was the color of the LED?
Cheap Checkout	What were the paid amounts?
Chess	What were the coordinates?
Chord Qualities	What was the given chord quality? What notes were in the given chord?
Color Decoding	What were the indicator patterns and colors in each stage?
Colored Squares	What was the first color group?

continued on next page...

Module	Information required
Colored Switches	What was the initial position of the switches? What was the switches' position when the LEDs came on?
Color Morse	What were the colors of the LEDs? What characters were flashed by the LEDs?
Coordinates	What was the grid size? What was the solution you selected first?
Crackbox	What was in each of the squares at the start of the last round?
Creation	What were the weather conditions on each day?
Double-Oh	Which button was the submit button?
Fast Math	What was the last pair of letters?
Functions	What was the last digit of the first query result? Where were the numbers and letter shown at the bottom?
The Gamepad	What were the numbers?
Gridlock	What was the starting color? What were the starting and ending location?
Hexamaze	What was the color of the pawn?
Hogwarts	Which House was each module solved for?
Human Resources	Which employees were listed but not fired? Which applicants were listed but not hired? Which descriptors were shown in red and green?
Hunting	Which stages had the column or row symbol first?
Ice Cream	Who were the customers? Which flavors were on offer to each customer?
Kudosudoku	Which squares were initially pre-filled?
LED Encryption	What were the correct button presses?
Listening	What was the correct code you entered?
Logical Buttons	What were the initial colors and labels of each button in each stage? What were the initial operators in each stage?

continued on next page...

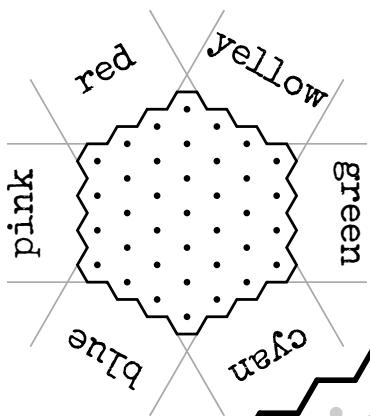
Module	Information required
Logic Gates	What were the logic gates?
The London Underground	What were the departure and destination stations?
Mafia	Who was a player, but not the Godfather?
Maritime Flags	What bearing was signaled? What callsign was signaled?
Minesweeper	What was the color of the starting cell?
Microcontroller	In which order did the LEDs light up?
Module Maze	What was the starting icon?
Monsplode, Fight!	Which creature was displayed? Which moves were selectable?
Monsplode Trading Cards	What were the names, rarities and print versions of the three cards in your hand and the card on offer before the final trade/keep?
The Moon	Which sets were initially lit/unlit?
Morse-A-Maze	What were the starting and ending location? What was the morse code word played?
Morseematics	What were the received letters?
Mouse in the Maze	What color was the torus? Which color sphere was the goal?
Murder	Which were the suspects and weapons? Where was the body found?
Mystic Square	What were the positions of the skull/knight?
Neutralization	What was the acid's color/volume?
Only Connect	What were the positions of the Egyptian hieroglyphs?
Orientation Cube	What was the observer's initial position?
Pattern Cube	At which position in the selection bar was the highlight?

continued on next page...

Module	Information required
Perspective Pegs	Which pegs made up the solution?
Planets	What was the planet shown? What was the correct color for each strip?
Polyhedral Maze	What was the starting position?
Probing	What were the missing frequencies in each wire?
Quintuples	What were the numbers and colors in every slot? How many numbers were there of each color?
Rhythms	What was the last color?
Schlag den Bomb	What were the contestant's name and both scores?
Sea Shells	What were the phrases?
Shapes And Bombs	What was the initial letter?
Shape Shift	What was the initial shape?
Silly Slots	What were the slots in each stage?
Simon Samples	What were the call samples in each stage?
Simon Screams	Which colors flashed in the final sequence? Which rules applied in which stage(s)?
Simon Sends	What were the red, green and blue received letters?
Simon Sings	Which keys' colors flashed in each stage?
Simon Speaks	Which bubbles flashed in each stage?
Simon States	Which color(s) flashed in each stage?
Skewed Slots	What were the original numbers?
Skyrim	Which races, weapons, enemies, cities and dragon shouts were selectable, but not the solution?
Sonic The Hedgehog	Which sound was played by each screen? What were the pictures?
Souvenir	What was the first module the other Souvenir asked a question about?
The Switch	What were the colors at the start and end of the last successful round?

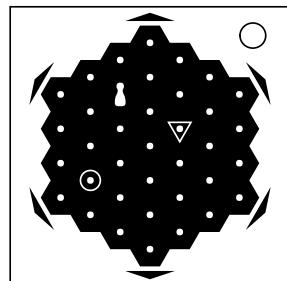
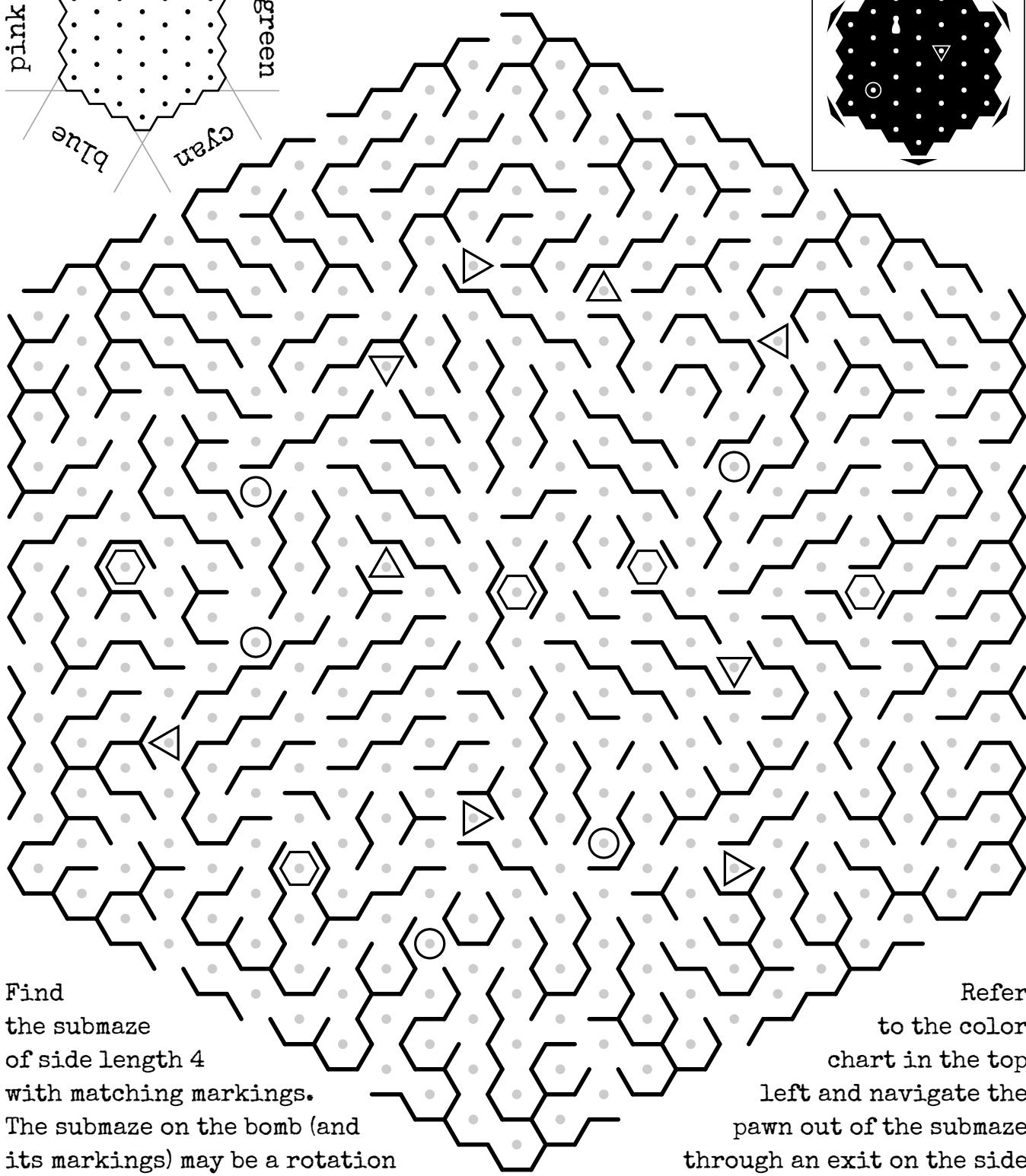
continued on next page...

Module	Information required
Switches	What was the initial position of the switches?
Symbolic Coordinates	Which symbols were present on each stage?
Symbol Cycle	How many symbols were present on each screen?
Synonyms	Which number was displayed?
Tap Code	What was the received word?
Ten-Button Color Code	What were the buttons' initial colors in each stage?
Text Field	What was the displayed letter?
Third Base	What was the display word in the first/second stage?
Tic-Tac-Toe	What was the initial state of the field?
Timezone	What were the departure and destination city?
Turtle Robot	What were the commented out code lines?
Two Bits	What were the correct three query responses?
Uncolored Squares	What were the colors used in the first stage?
Visual Impairment	What were the desired colors in each successful round?
Wavetapping	What was the correct pattern in each stage? What was the color in the first two stages?
The Wire	What were the colors of the dials when you solved it? What was the displayed number when you solved it?
Yahtzee	What was the first roll?



On the Subject of Hexamazes

Dammit Jim, I'm a doctor, not a honeybee!

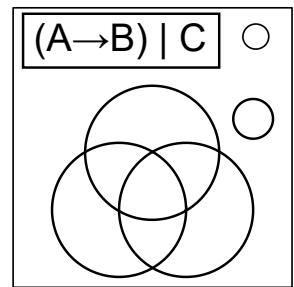


Warning: Do not cross the lines shown in the
maze. These lines are invisible on the bomb.

On the Subject of Boolean Venn Diagrams

Why is there a big Venn diagram? Why are there some weird symbols? Oh no...

- This module has eight buttons, one for each enclosed section of the Venn diagram and one representing the area not enclosed in any section of the diagram.
- The three circles are referred to as "A" (top), "B" (bottom left), and "C" (bottom right).
- For each section, use the boolean logic expression displayed above the Venn diagram to determine if that section is "true" or "false" by using the following rules:
 - If the section is enclosed in a circle, then the value for that variable is considered to be "true". Otherwise, it is "false".
 - Example: The middle section is enclosed in all three circles, so "A", "B", and "C" should all be considered to be "true" while evaluating that section.*
 - Evaluate the operator inside the parentheses before the one outside of the parentheses.
 - Images describing each operator can be found below (gray regions represent "true").
 - If the section evaluates to "true", press the button that corresponds with it. The section will turn green.
- Solve the module by pressing the buttons corresponding to all of the "true" sections.
- Note: if an incorrect button is pressed, a strike will be issued and the section will turn red.



$X \wedge Y$ AND	$X \vee Y$ OR	$X \vee \neg Y$ XOR	$X \rightarrow Y$ IMPLIES

$X \mid Y$ NAND	$X \downarrow Y$ NOR	$X \leftrightarrow Y$ XNOR	$X \leftarrow Y$ IMPLIED BY

On the Subject of Emoji Math



Math is easy. But is it easy when the numbers are in another language? Let's find out.

Decipher the characters on the display into numbers and solve the answer to the question. Enter the answer with the keypad and press '=' to submit it. Use '-' to toggle the negative sign for negative answers. There's no delete button so press those buttons carefully!

For example: =(+=(translates to 1+1

The answer to enter is 2.

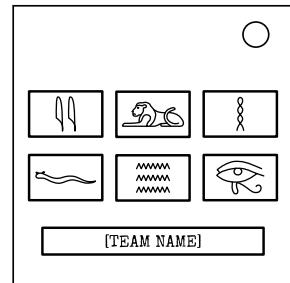
Character	Number
:)	0
=()	1
(:	2
)=	3
:()	4
):	5
=)	6
(=	7
:	8
:	9

On the Subject of Only Connect

Greek letters are too pretentious, so we use Egyptian hieroglyphs.

This module consists of two rounds.

Round 1: Egyptian Hieroglyphs



- The module displays the six familiar Egyptian hieroglyphs in a 3×2 arrangement, and a team name.
- Determine how many of the following criteria are met by each of the Egyptian hieroglyphs.
- Select the Egyptian hieroglyph that meets a number of criteria different from any other Egyptian hieroglyph.
- Criterion #1 is met if the Egyptian hieroglyph is in the specified location.
- Criterion #2 is met if the specified place in the serial number occurs in the team name. If the place is a digit, convert it to a letter (0=Z, 1=A, 2=B, ..., 9=I).
- Criterion #3 is met if the bomb has at least one of the specified port.

Criterion	Two Reeds	Lion	Twisted Flax	Horned Viper	Water	Eye of Horus
#1	top left	top middle	top right	bottom left	bottom middle	bottom right
#2	first	second	third	fourth	fifth	sixth
#3	PS/2	Parallel	RJ-45	Stereo RCA	Serial	DVI-D

Round 2: Connecting Wall

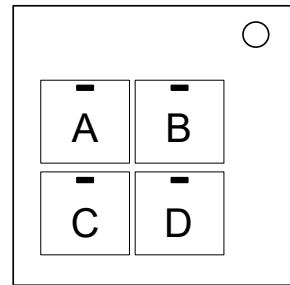
- The module displays a jumbled-up grid of 9 letters.
 - Group the 9 letters into 3 groups of 3, such that each group contains letters from the same language. There is only one solution.

Appendix: Names of diacritic marks and foreign letters

On the Subject of Alphabet

Can you speak English? Do you know the alphabet? Then you should be okay.

1. Use the four lettered buttons to spell a word from the word bank below.
2. Spell the longest word with the letters given by pressing the lettered buttons.
3. A letter can only be used once to spell a word.
4. If multiple words can be spelled, spell the word that comes first in alphabetical order, then the next one if there are enough remaining letters.
5. If no more words can be spelled, press the remaining buttons in alphabetical order.



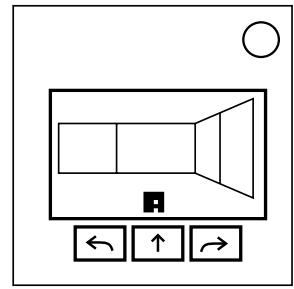
Word Bank:

JQXZ	QEWT	AC	ZNY	TJL
OKBV	DFW	YKQ	LXE	GS
VSI	PQJS	VCN	JR	IRNM
OP	QYDX	HDU	PKD	ARGF

On the Subject of 3D Maze

You are in a maze of twisty passages, all alike. Exits are to the north, south, east, and west.

- The defuser starts in a random position and orientation in one of the ten mazes below.
- Locate the defuser using a 3D view of the maze walls, which also shows the symbol on the floor of the current space, and if there is a symbol in the space ahead.
- The maze map is cyclic; moving off one of the edges will take the defuser to the space on the opposite side, provided there is no wall in between the space.
- One of the walls is the goal, the rest will cause strikes if moved into.
- To defuse the module, locate the goal wall, and move through it from either side.
- Using the methods below, calculate a row (0-7), a column (0-7), and a direction; the goal wall will be the first wall from these coordinates in the given direction.



Row:

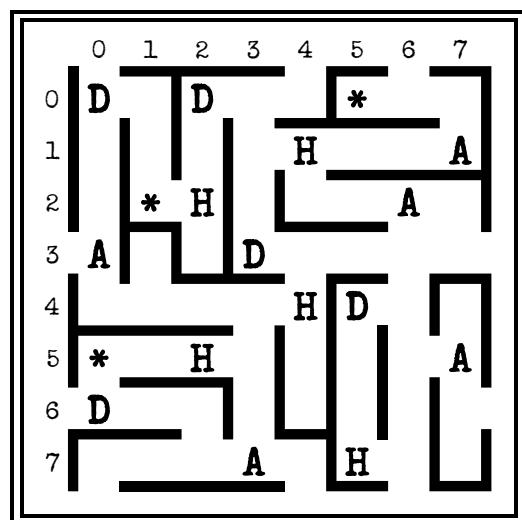
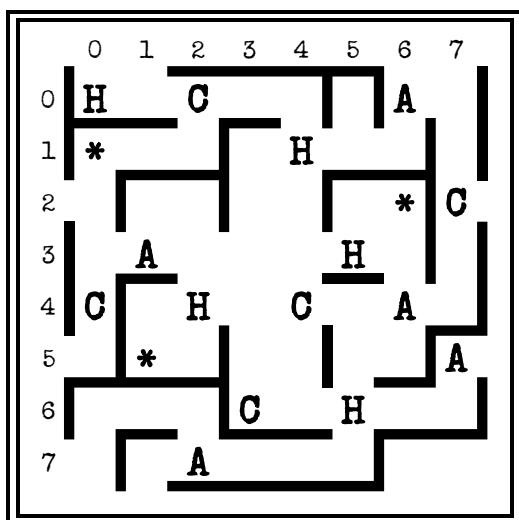
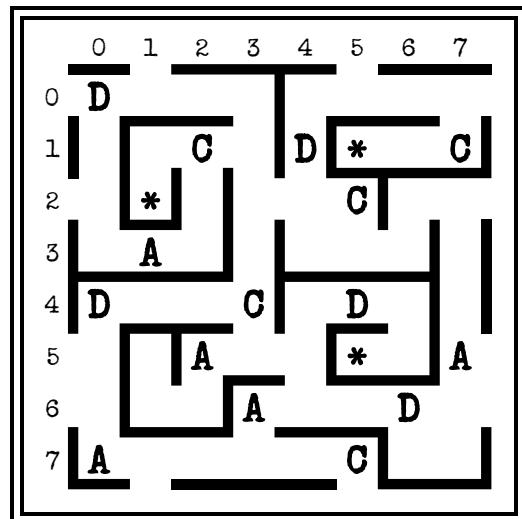
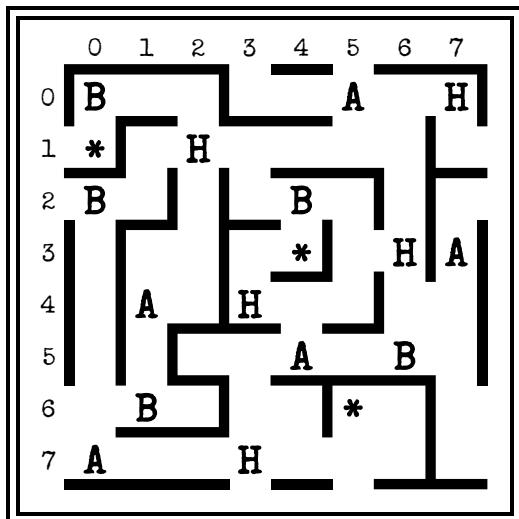
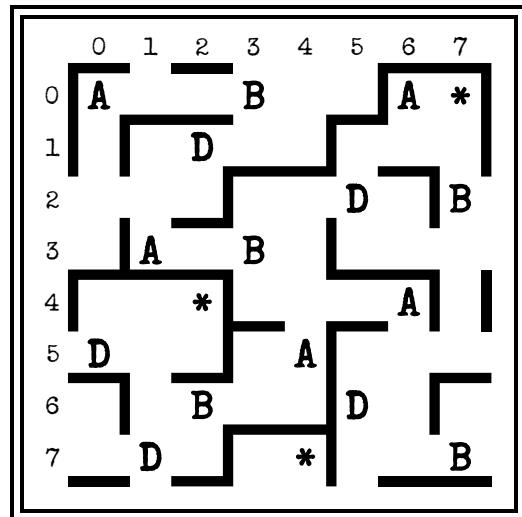
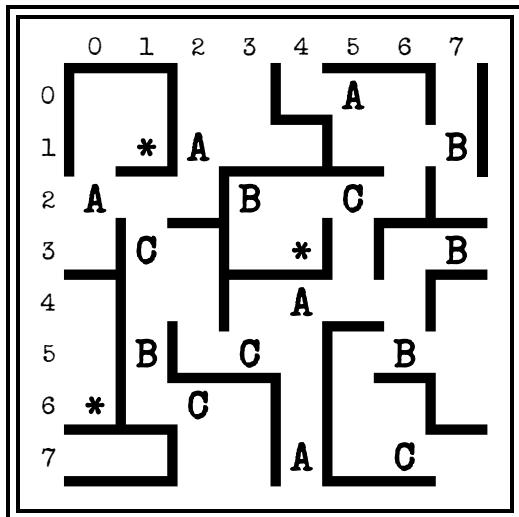
- Start with the first numeric digit in the serial number.
- Add 1 for every unlit indicator with a letter in “MAZE GAMER”.
- If the row number is greater than 7, subtract 8.

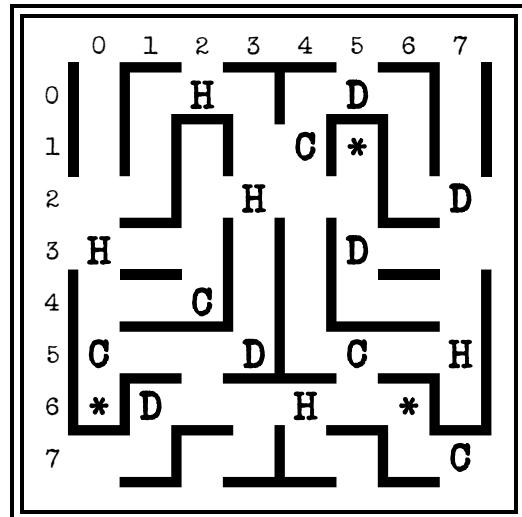
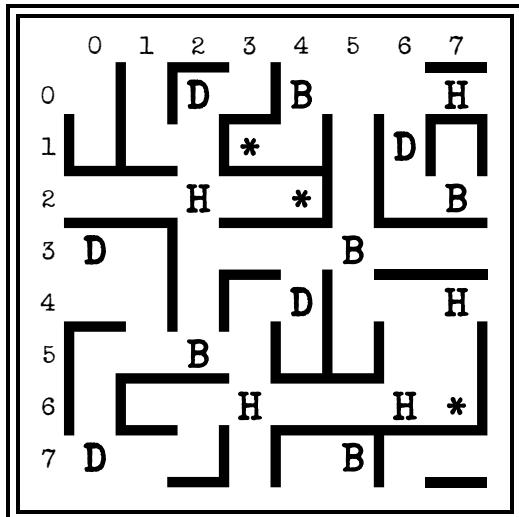
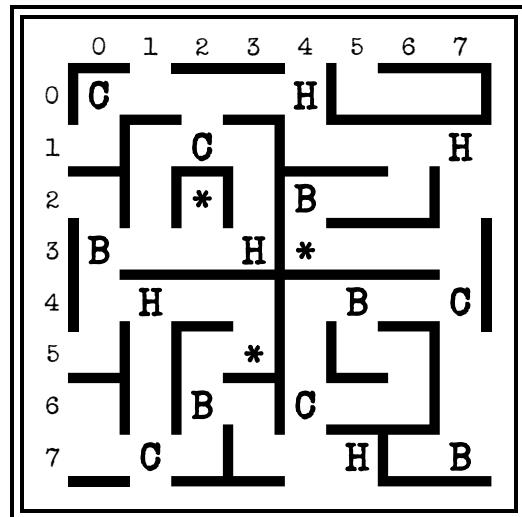
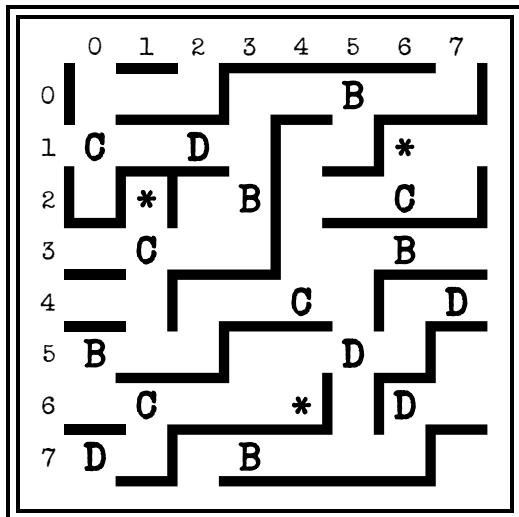
Column:

- Start with the last numeric digit in the serial number.
- Add 1 for every lit indicator with a letter in “HELP IM LOST”.
- If the column number is greater than 7, subtract 8.

Direction:

- Each maze contains three star icons marked on the map.
- On the floor in each of these locations is a letter, which maps to the direction to the goal wall: “N” becomes North, “S” becomes South, “E” becomes East, and “W” becomes West.
- Beware of letters not in these marked locations, they carry incorrect decoy instructions!

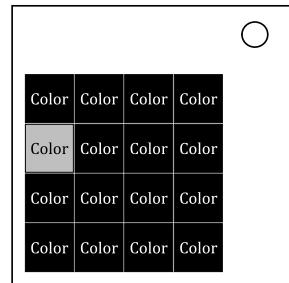




On the Subject of Colored Squares

There is order in chaos. A pattern in the colors. Find it, and all will become clear.

- Press all squares in the correct group to progress the module.
- Pressing a square will cause it to light up white. Light all squares to disarm the module.
- To begin, press the color group containing the fewest squares. If there is a tie, you are looking at a different module. Refer to the appendix below.
- Then use the table to determine the next group to press in each stage.
- “Group” refers to all squares of a particular color, or all unlit squares in the topmost row or leftmost column containing unlit squares.
- Pressing an incorrect square will result in a strike and reset the module.
- Lit squares will remain lit for the duration of the module, but unlit squares may change color in each stage.



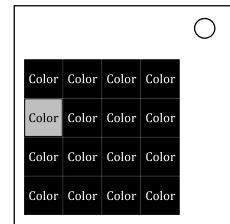
Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color

Currently Lit Squares	Previous Group of Squares Pressed						
	Red	Blue	Green	Yellow	Magenta	Row	Column
1	Blue	Column	Red	Yellow	Row	Green	Magenta
2	Row	Green	Blue	Magenta	Red	Column	Yellow
3	Yellow	Magenta	Green	Row	Blue	Red	Column
4	Blue	Green	Yellow	Column	Red	Row	Magenta
5	Yellow	Row	Blue	Magenta	Column	Red	Green
6	Magenta	Red	Yellow	Green	Column	Blue	Row
7	Green	Row	Column	Blue	Magenta	Yellow	Red
8	Magenta	Red	Green	Blue	Yellow	Column	Row
9	Column	Yellow	Red	Green	Row	Magenta	Blue
10	Green	Column	Row	Red	Magenta	Blue	Yellow
11	Red	Yellow	Row	Column	Green	Magenta	Blue
12	Column	Blue	Magenta	Red	Yellow	Row	Green
13	Row	Magenta	Column	Yellow	Blue	Green	Red
14	Red	Blue	Magenta	Row	Green	Yellow	Column
15	Column	Row	Column	Row	Column	Row	Column

Appendix: Identifying brethren of Colored Squares

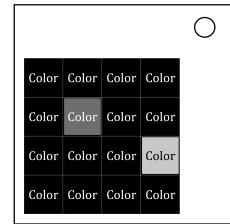
If one color occurs fewer times than any other (no tie):

Colored Squares (Colored Squares.html)



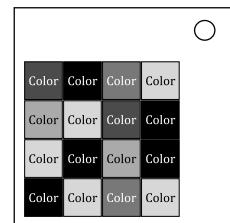
If two colors occur fewer times than the rest (two-way tie):

Uncolored Squares (Uncolored Squares.html)



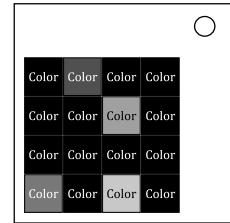
If three colors occur exactly twice each and two occur exactly 5 times each:

Decolored Squares (Decolored Squares.html)



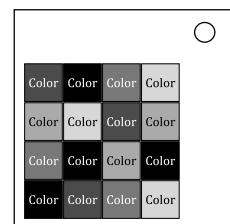
If four colors occur exactly once each:

Discolored Squares (Discolored Squares.html)



If four colors occur exactly three times each:

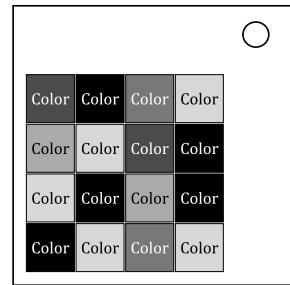
Varicolored Squares (Varicolored Squares.html)



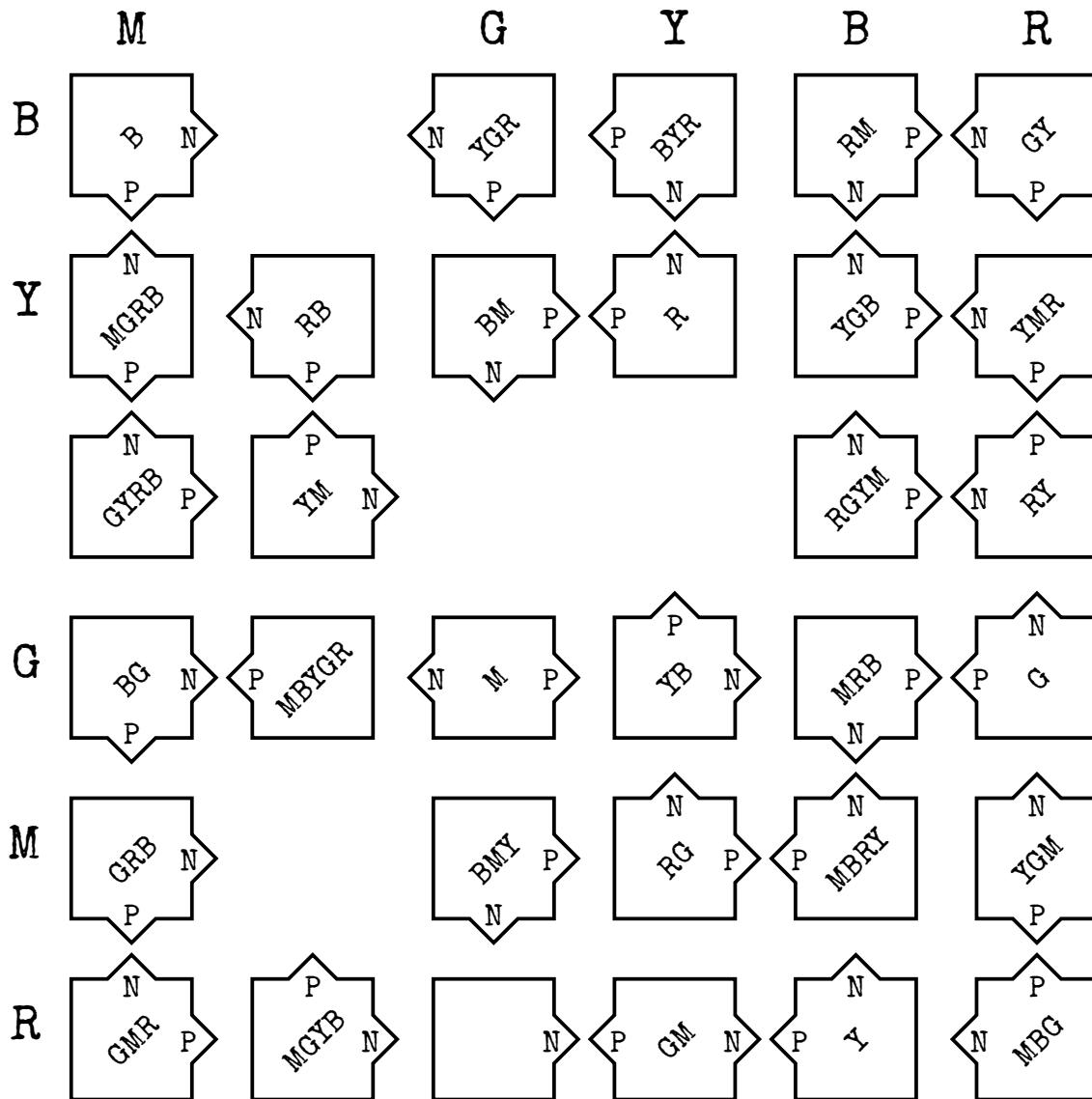
On the Subject of Decolored Squares

A structure cannot stand without a foundation. Logic is the foundation of function. Function is the essence of control.

- At the start, if there are not three colors that occur exactly twice each and two that occur exactly 5 times each, you are looking at a different module.
- Find your starting position in the following flowchart. The column is the color of B1, the row that of B4 (letters are columns from left to right, numbers rows from top to bottom). Re-assess this in case of strikes.
- Examine the top-left square. If its color is listed in your current flowchart cell, follow the “P” arrow and tap the square; otherwise, follow the “N” arrow. Then move on to the next square.
- The “next square” is the one to the right of the current square. After each full row, continue processing the remaining rows from top to bottom.
- The colors are **B** (blue), **G** (green), **M** (magenta), **R** (red) and **Y** (yellow).



Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color



On the Subject of Discolored Squares

Order gives way to entropy. Entropy is the disappearance of order. Welcome... to the real chaos.

- At the start, if there are not four colors that occur exactly once each, you are looking at a different module.
- Begin by pressing those four colors. Remember their positions and colors in the order you pressed them. Then stage 1 begins. If none of the squares in stage 1 are of the first remembered color, you are looking at a different module.
- At each stage, look at the below table and read the cell in the respective remembered position to obtain an instruction.

Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color

Instructions

	Move NW (wrap)		Move NE (wrap)		Move N (wrap)		Rotate 180°
	Mirror about \		Move SW (wrap)		Mirror about		Stay in place
	Mirror about /		Move E (wrap)		Rotate 90° CW		Move W (wrap)
	Mirror about —		Move S (wrap)		Rotate 90° CCW		Move SE (wrap)

- Take all the squares of the respective remembered color in the order specified below and do the following for each such square:
 - Modify its position as instructed by the table cell.
 - If the modification takes you to an already white square, keep applying the modification.
 - Press the first non-white square you land on.
 - If the square you pressed is of the current remembered color, remove that square from future consideration for the remainder of this stage.
- Process the squares in the following order:

Stage 1			
5	12	1	15
14	13	7	3
9	4	6	10
16	2	8	11

Stage 2			
1	14	6	7
12	15	3	10
16	4	2	11
9	8	13	5

Stage 3			
16	9	7	12
6	15	3	5
11	8	13	14
2	10	1	4

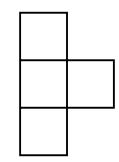
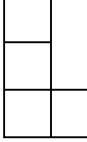
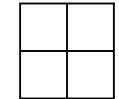
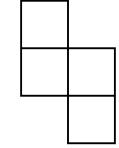
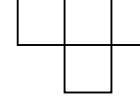
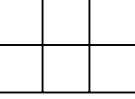
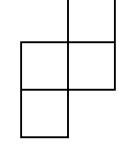
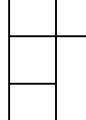
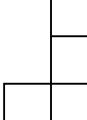
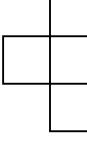
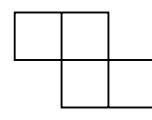
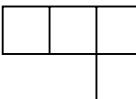
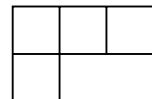
Stage 4			
4	11	3	14
16	12	7	8
5	2	6	9
1	13	15	10

On the Subject of Uncolored Squares

A pattern is more than the sum of its parts. Find the parts, and let the pattern emerge.

- Press squares in specific patterns to progress the module.
- At each stage, find the two colors that occur fewer times than any other colors. If there is no such two-way tie at the start, you are looking at a different module.
- Using those two colors, determine the pattern to press below. Press any set of lit squares in that pattern.
- Once completed, the squares making up the pattern become unlit and the next stage is generated. Repeat this process until the module is disarmed.

Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color

Other color ↓	First color in reading order				
	Red	Green	Blue	Yellow	Magenta
Red					
Green					
Blue					
Yellow					
Magenta					

On the Subject of Varicolored Squares

Conformity is key. Patterns encourage conformity. Find the pattern, and conformity will naturally arise.

- Pressing a square will cause it to flash white and may cause other squares to change color. Make all squares have the same color to disarm the module.
- Pressing any square of the valid color will progress the module by causing all squares connected to the square pressed first which match its color to change to the pressed color. If this does not increase in size after three presses, the color of the pressed square will change.
- To begin, press a square of the color occurring 4 times. If the remaining colors aren't in 4 groups of 3, you are looking at a different module.
- Then use Table A to determine the next valid color.
- Pressing an incorrect square will result in a strike and reset the module.

Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color
Color	Color	Color	Color

Table A

Consider the list of distinct colors adjacent to the flashing square and use the table below. Note that “adjacent” squares are the squares immediately above, below, left, and right of a given square.

Colors	Rule
1	The next valid color is the color which is clockwise from the adjacent color in the correct pentagon in Table B.
2	If the two colors are adjacent in the correct pentagon in Table B, the next valid color is the color which is opposite those two colors.
	Otherwise, the next valid color is the color which is between those two colors.
3	If the three colors are adjacent in the correct pentagon in Table B, the next valid color is the color which is opposite the two colors not present.
	Otherwise, the next valid color is the color which is between the two colors not present.
4	The next valid color is the color which is not present.
<p><i>Note: if, at any point, the valid color is the same as the color pressed previously or no squares are present of the valid color, the valid color changes to the color counter-clockwise from the valid color in the correct pentagon in Table B.</i></p>	

Table B

Consider the color of the flashing square and use the table below. Each letter refers to the color starting with that letter.

Blue	Red
Magenta	Yellow
Green	

On the Subject of Cryptography

WLMY ETGXFD EQCD ED PQKW WT CMFF EZYDFB.

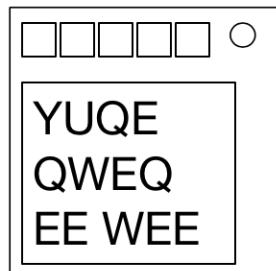
SEE APPENDIX CD43 FOR AN EXCERPT OF "A CHRISTMAS CAROL".

SEE APPENDIX CD44 FOR FREQUENT LETTERS AND WORDS.

This module will display ciphertext which contains a sentence from Charles Dickens' "A Christmas Carol" (aka the plaintext). The plaintext has been encrypted via a substitution cypher, meaning each letter in the alphabet is substituted for a different letter.

- The letter E will always mean the letter E.
- Apart from the letter E, no letter can substitute itself.
- All punctuation has been removed from the ciphertext.
- Above the display are five keys each with a letter that is found in the plaintext.
- Once the ciphertext is decrypted, press each key only once, in order that they appear in the plaintext.
- Entering the incorrect sequence will gain a strike, try the sequence again from the beginning.

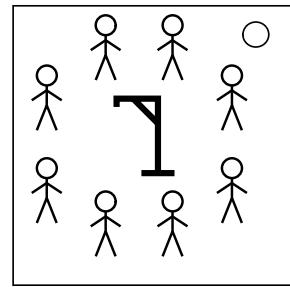
NOTE: The meaning of the word colors is currently unknown, however you can safely ignore them.



On the Subject of Mafia

Godfather is him, Mafia is her, kill them, save them. I'm innocent!AHHHHH!

In this module, there are 8 named people that sit around a gallows. It's your job to deduce who is the Godfather, whom you then have to execute. To figure out who is the Godfather, follow the following instructions:



- Take all the values of the serial number, changing letters into numbers by their placement in the alphabet (A=1, B=2 etc.), and add them together.
- Starting from the top of the list below, count this many names. Then keep going until you get to a name that's on the module. If you go past #50, loop back around to #1.
- Rule out people by crossing off the name from the previous step and going around the circle by skipping people equal to the last number of the serial. Go clockwise if you have less than 2 indicators and counter-clockwise otherwise.
- Continue around the circle, skipping over people you have ruled out, until you have one person left.
- Find the name that's left in the table and look at their "Innocence Condition". If they do not meet the condition, they are the Godfather and should be executed. If they are found innocent, execute the person referred to in the "Otherwise" column.

*FRP = First Ruled-out Person

*LRP = Last Ruled-out Person

*SSN = Same Side Neighbor (Person who is on the same side of the module with them: top 2, bottom 2, left 2, right 2)

#	Name	Innocent/Godfather Condition	Otherwise, Godfather is...
1	Rob	Innocent if the serial number contains a vowel.	Person clockwise after Rob.
2	Tim	Innocent if there is a "Friendship", "Only Connect", "Battleship" or "Marble Tumble".	FRP
3	Mary	Innocent if Bob, Walter or Cher is present.	Person on the left in the top pair, SSN if it is Mary.
4	Briane	Innocent if there is a Two Factor or lit CAR indicator.	LRP
5	Hunter	Innocent if there are more ports than batteries.	Rick, or 4th ruled-out player if Rick is absent.
6	Macy	Innocent if Tommy is present.	Tommy
7	John	Innocent if John is the only person on the module whose name starts with "J".	SSN
8	Will	Innocent if there is a PS/2 or DVI port and at least one even number in the serial number.	5th person ruled out.
9	Lacy	Innocent if there is a "Boolean Venn Diagram", "Bitwise Operations", or any module containing "Logic" in its name.	SSN
10	Claire	Innocent if there are less than 20 modules.	LRP
11	Kenny	Innocent if there are <u>no</u> unlit indicators.	Person clockwise after FRP (skip Kenny)
12	Rick	Innocent if there is an empty port plate.	Person counterclockwise from Rick.
13	Walter	Innocent if serial number contains any letters from Walter's name.	FRP
14	Bonnie	Innocent if there is another person on the module whose name starts with "B".	First person clockwise from Bonnie whose name starts with "B".
15	Luke	Always Innocent.	Person with lowest number (excluding Luke).
16	Bill	Innocent if last number of serial number is prime or zero.	Person with highest number (excluding Bill).

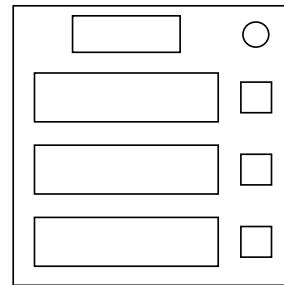
N#	Name	Innocent/Godfather Condition	Otherwise, Godfather is...
17	Sarah	Innocent if there is a colored indicator, HDMI port, or if "S", "H", or "3" is in the serial number.	LRP
18	Larry	Larry is colorblind. Innocent if there are <u>no</u> modules containing "Color" in their name.	FRP
19	Kate	Innocent if there is an "L", "O", "S", or "T" in the serial number, or if "The Swan" is present.	John; SSN if John is absent
20	Stacy	Innocent if there are fewer modules than starting time in minutes.	FRP
21	Diane	Innocent if there is a VGA or USB port, or if there is "The Screw".	LRP
22	Mac	Innocent if there is a parallel port on the same plate as a serial port.	6th person ruled out
23	Jim	Jim is a musician. Innocent if there is a "Chord Qualities", "Rhythms", or any module with "Piano Keys", "Jukebox" or "Guitar Chords" in the name.	SSN
24	Clyde	Innocent if Bonnie is present.	Bonnie
25	Tommy	Innocent if there are <u>neither</u> batteries nor ports.	4th person ruled out
26	Lenny	Innocent if SSN's name does <u>not</u> contain exactly 3 letters.	SSN
27	Molly	Innocent if there is <u>no</u> module apart from Mafia whose name starts with "M" or "The M".	Person clockwise after Molly.
28	Benny	Innocent if Hunter, Cher, or Nick are not the FRP.	The third person after Benny in clockwise order.
29	Phil	Innocent if not on the right of the bottom two.	Person on the right of the bottom two.
30	Bob	Innocent if there is "Laundry", "Morse-A-Maze", "Big Circle", "Painting", "Dr. Doctor", "The Code", or a BOB indicator. Thanks for everything, Bob!	3rd person ruled out.
31	Gary	Gary is lazy and likes to eat. Innocent if there is a "Cheap Checkout", "Ice Cream" or "Cooking".	LRP
32	Ted	Ted is an astronaut. Innocent if there is a "Black Hole", "The Sun", "The Moon", "Lightspeed" or "Astrology".	SSN
33	Kim	Innocent if FRP's number is 25 or less.	FRP

N#	Name	Innocent/Godfather Condition	Otherwise, Godfather is...
34	Nate	Innocent if there are more lit indicators than unlit.	Person clockwise after Nate.
35	Cher	Innocent if there is <u>no</u> needy module and 1 or more ports.	LRP
36	Ron	Innocent if letters of the serial number share letters with any indicator on the bomb.	SSN
37	Thomas	Thomas doesn't like being stuck in mazes. Innocent if there is <u>no</u> module with "maze" in the name.	Second person counterclockwise after Thomas.
38	Sam	Innocent if there is "Creation", "The Gamepad", "Minesweeper" or "Skewed Slots".	LRP
39	Duke	Innocent if LRP's number is greater than 25.	LRP
40	Jack	Innocent if SSN has 4 letters in their name.	SSN
41	Ed	Innocent if the total number of "Gridlock", "Human Resources", "Lasers" and modules containing "Double-Oh" is exactly one.	2nd person ruled out.
42	Ronny	Innocent if there are <u>no</u> vanilla modules or there are 4 or more ports.	FRP
43	Terry	Innocent if there are 3 or more batteries on the bomb.	3rd person ruled out.
44	Claira	Innocent if there are at least two port plates that have at least an RJ, RCA, or PS/2 port on them.	SSN
45	Nick	Innocent if there is <u>no</u> "Zoo", "Nonogram", "Murder" or "X01".	FRP
46	Cob	Cob loves inception. Innocent if there are 2 or more of the same module.	First person clockwise from Cob with the most letters in their name.
47	Ash	Innocent if there are any modules pertaining to Monsplodes.	LRP
48	Don	<u>Always guilty.</u>	N/A
49	Jerry	Innocent if "The Clock", "Rubik's Clock", "The Stopwatch", "Timezone" or "The Time Keeper" is present.	Person counterclockwise after Jerry.
50	Simon	Simon likes to be alone. Innocent if there are <u>no</u> modules with Simon's name.	SSN

On the Subject of FizzBuzz

Why put a classic schoolyard game on a bomb? Wait... that's odd...

- This module has three displays, each with a seven-digit number.
- For each number, find the column corresponding to the color of the number in the table below. Go through that column and take a note of each integer whose condition applies.
- Take the sum of these integers to get a number. Take this number and add it to each digit of the displayed number to get a new seven-digit (or less if the first few digits are zeros) number. **Be sure to disregard any carry digits you get when performing this operation.**
- If the new number is not divisible by three or five, do nothing.
If the new number is divisible by three and not five, use the button to change the display to "FIZZ".
If the new number is divisible by five and not three, use the button to change the display to "BUZZ".
If the new number is divisible by both five and three, use the button to change the display to "FIZZBUZZ"
- Finally, repeat for the remaining numbers and press "SUBMIT" once all three numbers' displays are correct.

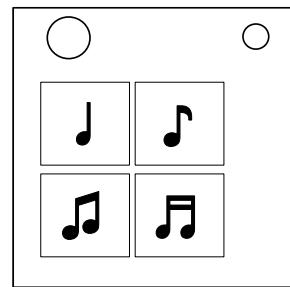


Condition	red	green	blue	yellow	white
3 or more battery holders are present on the bomb.	7	3	2	4	5
At least one Serial <u>and</u> Parallel port is present on the bomb.	3	4	9	2	8
3 letters and 3 digits are present in the serial number.	4	5	8	8	2
At least one DVI-D <u>and</u> Stereo RCA port is present on the bomb.	2	3	7	9	1
2 or more strikes are present on the bomb.	6	6	1	2	8
5 or more batteries are present on the bomb.	1	2	2	5	3
None of the above apply.	3	1	8	3	4

On the Subject of Rhythms

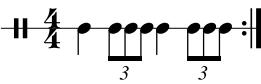
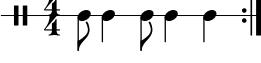
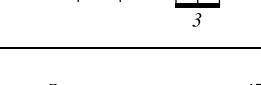
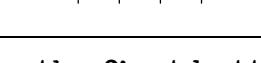
Have you ever taken a music theory class where you had to count and clap rhythms? This is just like that, only here your suffering ends when you get it wrong.

See the next page for musical note durations.



1. The colored indicator light will flash in one of the rhythms shown below.
2. To defuse this module, two buttons will need to be pressed in succession, each held until the correct number of beeps are heard.
3. The button order and length is specified in the table below.

Each button press is represented by a musical note and an alphanumeric digit. The musical note is the label of the button that must be pressed, and the digit is the number of beeps that must be heard before the button is released, or P if the button should be pressed and released immediately.

Rhythm of Light Flashes	Color of Indicator Light			
	Blue	Red	Green	Yellow**
4/ 	J2/JP	***	J2/JP	J2/JP
4/ 	J1/JJP	JP/JP	JP/J1	J1/J1
4/ 	J1/JP	J1/J1	JP/JP	JP/J1
4/ 	JP/JP	J1/JP	J1/JP	J1/JP
4/ 	J1/JP	JJP/JP	J1/JP	JP/J1
4/ 	J1/J1	JP/J1	JP/JP	JP/J1
4/ 	JP/J1*	JP/J1*	JP/J1*	JP/JP*

*Use the first button press in place of the second if there is more than one battery on the bomb

**Hold both buttons for one additional beep per lit indicator on the bomb

***Press buttons as quickly as possible until module is disarmed

Musical Note Duration Reference

Musical notes have many important properties, but for this module only their duration is important. Every pattern shown above consists of four beats, and they are distributed between the following notes:

- ♪ **Half Note:** This note lasts for two beats, exactly half of a measure.
- ♩ **Dotted Quarter Note:*** In-between a quarter note and a half note, the dotted quarter note lasts for one and a half beats.
- ▢ **Quarter Note:** The most common note, the quarter note lasts for one beat.
- ▢▢ **Eighth Note:** The basis of syncopation, the eighth note lasts for half of a beat.
- ▢▢▢ **Sixteenth Note:** The bane of woodwind players everywhere, the sixteenth note lasts for a quarter of a beat.

▢▢ = ▢▢ **Beamed Eighth Notes:** To enhance clarity, successive eighth notes are often drawn with a single beam connecting them.

▢▢ = ▢▢▢ **Beamed Sixteenth Notes:** Similarly, successive sixteenth notes are often drawn with two beams connecting them.

▢▢▢ **Eighth Note Triplet:*** Each note in this triplet lasts for a third of the beat.

*Dots and triplets can be added to any note durations, but this module only uses dotted quarter notes and eighth note triplets.

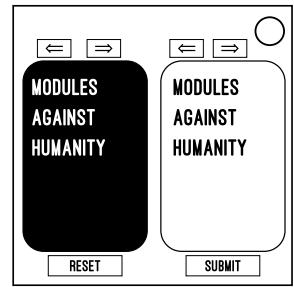
If all else fails, then you can trust the spacing of the notes to guide you.

On the Subject of Modules Against Humanity

Some of these modules are really inhumane. What should you do then? Just laugh in their faces.

This module includes two sets of cards, 10 cards in each set.

The first two cards that you see (one black, one white) are referred to as initial cards and they both are considered to be set at number 1. Each card can be set to a number between 1 and 10.



To get the secondary cards:

If you can spell the word POOP from the letters of one of the initial cards, set that card (or both, if applicable) to number 2.

Otherwise, the secondary black card's position is determined by number of unlit indicators + number of ports; and the secondary white card's position is determined by number of lit indicators + number of batteries.

To get the final cards:

If only the secondary black card refers to a module that you have on the bomb, adjust the secondary white card by +2.

If only the secondary white card refers to a module that you have on the bomb, adjust the secondary black card by +1.

If both secondary cards refer to modules that you have on the bomb, adjust the secondary black card by +4 and the secondary white card by +3.

If neither of the secondary cards refers to a module that you have on the bomb:

- If the serial number contains M, A or H, adjust both secondary cards by -2;
- Otherwise, if the black card is on the left, the final black card's position is number of unique ports and the final white card's position is number of indicators;
- Otherwise, the final black card's position is number of modules on the bomb and the final white card remains at the secondary position.

Once you have the final cards, press the submit button.

Notes:

Black cards have black background and white letters; white cards have white background and black letters.

Adjusting by a positive value means cycling the card to the right by the specified number. Adjusting by a negative value means cycling the card to the left by the specified number.

If the number of a card value is 0, set the card to the number 10. If it is above 10, subtract 10. If it is less than 1, add 10.

Pressing the reset button will return the module to the initial state.

Pressing the reset button will not cause a strike.

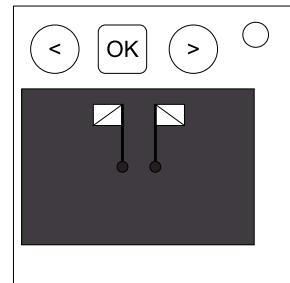
Upon a strike, the module will reset itself to the initial state. All the cards on the module will remain the same.

On the Subject of Semaphore

This module demands attention from the sea – unlucky for you the bomb's bone dry.

See the next page for semaphore reference.

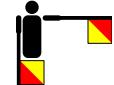
- A semaphore module will present with a previous button, a next button, an OK button and a semaphore indicator.
- Use the previous and next buttons to navigate through the semaphore sequence, starting from the left-most semaphore character to the right-most semaphore character.
- The semaphore sequence will contain some characters from the serial number on the bomb, but also includes one other character not present in the serial number.
- Navigate to the one and only character that is missing from the serial number, and then press the OK button.
- Control characters, such as 'Numerals', 'Letters', 'Error', 'Rest' and 'Cancel' are not considered as a valid answer.



Semaphore Reference

Numbers are signalled by first signalling 'Numerals', then the numbers.
Similarly, letters are signalled by first signalling 'Letters', then the letters.

Use the following graphics as a reference to how to interpret semaphore characters.

		 Error / Attention		
				
				
				
				
				 Cancel / Annul

(All images by [Denelson83](#)

(<https://commons.wikimedia.org/wiki/User:Denelson83>), used under [CC-BY-SA-3.0](#)

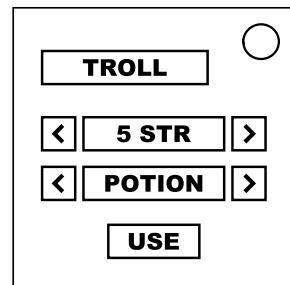
(<http://creativecommons.org/licenses/by-sa/3.0/>), via [Wikimedia Commons](#)

(<https://commons.wikimedia.org/>)

On the Subject of Adventure Games

This appears to be a strange interface for an old text adventure game. All of the inventory management puzzles you have come to know and love, but none of the story.

- The three screens show the enemy you are facing, a list of statistics about your character and the world, and a list of the objects in your inventory.
- In your inventory is three weapons, plus five miscellaneous items.
- You must decide which of the items to use to prepare for the battle, then which weapon to use.
- Use the left and right arrows to scroll through statistics and inventory.
- To use an item or weapon, press “USE” when it is displayed in the inventory.
- Use the item table below to determine whether or not to use each item.
- Items can be used in any order, but all applicable items must be used before a weapon is used to fight the enemy.
- Use the weapon table and the enemy statistic table to determine which weapon to use to fight the enemy.
- For each weapon, compare the player’s relevant stat (STR, DEX, or INT), plus any bonus, to the enemy’s same stat.
- To defeat the enemy most efficiently, use the weapon which has the highest stat advantage (or lowest disadvantage).
- If two weapons have the same stat advantage, either can be used.



Statistic	Description
5 STR	Strength (STR) of player, used in combat
5 DEX	Dexterity (DEX) of player, used in combat
5 INT	Intelligence (INT) of player, used in combat
5' 5"	Height of player, in feet and inches
15°C	Temperature, in degrees Celsius
9.8 m/s ²	Force of gravity, in meters per second squared
101 kPa	Atmospheric pressure, in kilopascals

Item	Use if...
Balloon	Gravity is less than 9.3 m/s^2 or pressure is greater than 110 kPa, and not fighting an Eagle.
Battery	There is at most 1 battery on the bomb, and fighting an enemy other than a Golem or a Wizard.
Bellows	If fighting a Dragon or an Eagle, use if pressure is greater than 105 kPa. If fighting a different enemy, use if pressure is less than 95 kPa.
Cheat code	Cheaters never prosper! Don't use these.
Crystal ball	INT is greater than the last digit of the serial number, and not fighting a Wizard.
Feather	DEX is greater than either STR or INT.
Hard drive	There are two or more of the same port on the bomb.
Lamp	Temperature is less than 12°C , and not fighting a Lizard.
Moonstone	There are at least two unlit indicators on the bomb.
Potion	Always use, but note that STR, DEX, and INT may change.
Small dog	Fighting an enemy other than a Demon, a Dragon, or a Troll.
Stepladder	The player is shorter than 4', and fighting an enemy other than a Goblin or a Lizard.
Sunstone	There are at least two lit indicators on the bomb.
Symbol	Fighting a Demon or a Golem, or if the temperature is greater than 31°C .
Ticket	The player is 4' 6" or taller, and gravity is at least 9.2 m/s^2 , and at most 10.4 m/s^2 .
Trophy	STR is greater than the first numeric digit of the serial number, or if fighting a Troll.

Enemy	STR	DEX	INT
Demon	50	50	50
Dragon	10	11	13
Eagle	4	7	3
Goblin	3	6	5
Golem	9	4	7
Troll	8	5	4
Lizard	4	6	3
Wizard	4	3	8

Weapon	Uses...	Bonus
Broadsword	STR	+0
Caber	STR	+2
Nasty Knife	DEX	+0
Longbow	DEX	+2
Magic orb	INT	+0
Grimoire	INT	+2

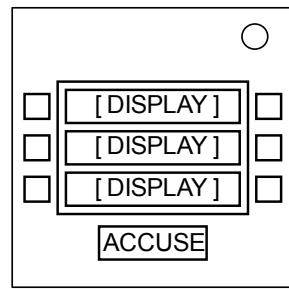
On the Subject of Murder

This module is powered by the restless soul of a murder victim. The only way to disarm it is to solve the case so the victim can pass peacefully to the afterlife.

See Appendix A for indicator identification reference.

See Appendix B for battery identification reference.

See Appendix C for port identification reference.



- Select the murderer, murder weapon, and location on the display panels and press "ACCUSE" to disarm the module.
- The module displays one location in red – this is the room in which the body was found. It is not necessarily the room in which the crime occurred.
- The table below shows the location of the suspects and potential weapons at the time of the murder. The murderer must have been in the same location as the murder weapon at this time.
- Some suspects and potential weapons have already been eliminated from the investigation – these are not listed on the module.

Suspects:

If there is a lit indicator with label TRN, use row 5 to locate the suspects.

Otherwise, if the body was found in the Dining Room, use row 7.

Otherwise, if the bomb has 2 or more Stereo RCA ports, use row 8.

Otherwise, if there are no D batteries on the bomb, use row 2.

Otherwise, if the body was found in the Study, use row 4.

Otherwise, if there are 5 or more batteries, use row 9.

Otherwise, if there is an unlit indicator with label FRQ, use row 1.

Otherwise, if the body was found in the Conservatory, use row 3.

Otherwise, the suspects can be located using row 6.

Weapons:

If the body was found in the Lounge, use row 3 to locate the weapons.

Otherwise, if there are 5 or more batteries, use row 1.

Otherwise, if the bomb has a serial port, use row 9.

Otherwise, if the body was found in the Billiard Room, use row 4.

Otherwise, if there are no batteries on the bomb, use row 6.

Otherwise, if there are no lit indicators on the bomb, use row 5.

Otherwise, if the body was found in the Hall, use row 7.

Otherwise, if the bomb has 2 or more Stereo RCA ports, use row 2.

Otherwise, the weapons can be located using row 8.

Locations:

	Miss Scarlett	Professor Plum	Mrs Peacock	Reverend Green	Colonel Mustard	Mrs White
	Candle-stick	Dagger	Lead Pipe	Revolver	Rope	Spanner
1	Dining Room	Library	Lounge	Kitchen	Study	Conservatory
2	Study	Hall	Billiard Room	Lounge	Kitchen	Library
3	Kitchen	Billiard Room	Ballroom	Library	Conservatory	Dining Room
4	Lounge	Ballroom	Dining Room	Conservatory	Hall	Kitchen
5	Billiard Room	Kitchen	Study	Ballroom	Dining Room	Hall
6	Conservatory	Lounge	Library	Study	Billiard Room	Ballroom
7	Ballroom	Conservatory	Kitchen	Hall	Library	Study
8	Hall	Study	Conservatory	Dining Room	Lounge	Billiard Room
9	Library	Dining Room	Hall	Billiard Room	Ballroom	Lounge

On the Subject of Cheap Checkout

Who in the world is purchasing something at a time like this?

- There is a shopping list of items that are being purchased and can be viewed with the arrow buttons.
- Above that, it shows the amount the customer paid.
- Add up the amount of money it costs for all the items, applying the sale to each item based on the day of the week.
- Weighted items must have their weight applied before applying the sale.
- If the customer has paid enough money, simply input the correct amount of change the customer should receive using the buttons on the module and then press submit.
- Otherwise if the customer hasn't paid enough, press submit without any change to alert the customer. Wait for the new amount of money from the customer and then figure out how much change to give.
- After pressing the submit button, the change will be cleared.

\$17.23		<input type="radio"/>	
<	Potato Chips	>	
.01	.05	.10	.25
1	5	10	25
SUBMIT		CLEAR	

Glossary

- Item price refers to the price before the sale has been applied.
- Fixed price items don't have their prices change based on their weight.
- A digital root is calculated by adding all the digits of a number together and repeating the process on the new number until you have a single digit.
- Commercial rounding is when the digit checked for rounding is 5 or greater, the number is rounded up, otherwise you round down.

Sales:

The day of the week is the date listed on the defuser's computer when the module is activated.

Special Sunday

All fixed price items that contain an S in them are \$2.15 more.

Malleable Monday

The 1st, 3rd and 6th items on the shopping list are 15% off.

Troublesome Tuesday

Calculate the digital root of the item price without the decimal point. Add that many dollars to the item price. Only applies to fixed price items.

Wacky Wednesday

Change each occurrence of the largest digit in the price with the smallest digit in the price, and vice versa.

Thrilling Thursday

All of the odd positioned items on the shopping list are half off.

Fruity Friday

All fruits are 25% more per pound.

Sweet Saturday

All sweet items are 35% off.

Item Prices:

Prices should always be kept in terms of dollars, for example, \$0.68 instead of 68¢. All item prices are rounded to the 2nd decimal. You must commercially round after calculating the item price as well as after applying the sale.

Item	Price	Category
Bananas	87¢ per lb	Fruit
Broccoli	\$1.39 per lb	Vegetable
Candy Canes	\$3.51	Sweet
Canola Oil	\$2.28	Oil
Cereal	\$4.19	Grain
Cheese	\$4.49	Dairy
Chicken	\$1.99 per lb	Protein
Chocolate Bar	\$2.10	Sweet
Chocolate Milk	\$5.68	Dairy
Coffee Beans	\$7.85	Bean
Cookies	\$2.00	Sweet
Deodorant	\$3.97	Care Product
Fruit Punch	\$2.08	Sweet
Grape Jelly	\$2.98	Sweet
Grapefruit	\$1.08 per lb	Fruit
Gum	\$1.12	Sweet
Honey	\$8.25	Sweet

Item	Price	Category
Mints	\$6.39	Sweet
Mustard	\$2.36	Grain/Oil
Oranges	80¢ per lb	Fruit
Paper Towels	\$9.46	Household Item
Pasta Sauce	\$2.30	Vegetable
Peanut Butter	\$5.00	Protein
Pork	\$4.14 per lb	Protein
Potato Chips	\$3.25	Oils
Potatoes	68¢ per lb	Vegetable
Shampoo	\$4.98	Care Product
Socks	\$6.97	Clothing
Soda	\$2.05	Sweet
Spaghetti	\$2.92	Grain
Steak	\$4.97 per lb	Protein
Sugar	\$2.08	Sweet
Tea	\$2.35	Water
Tissues	\$3.94	Care Product

Ketchup	\$3.59	Extra
Lemons	\$1.74 per lb	Fruit
Lettuce	\$1.10 per lb	Vegetable
Lollipops	\$2.61	Sweet
Lotion	\$7.97	Care Product
Mayonnaise	\$3.99	Oil

Tomatoes	\$1.80 per lb	Fruit
Toothpaste	\$2.50	Care Product
Turkey	\$2.98 per lb	Protein
Water Bottles	\$9.37	Water
White Bread	\$2.43	Grain
White Milk	\$3.62	Dairy

On the Subject of Wire Placement

Sometimes, the wire may look like a face, calming you down... and then you explode.

- This module contains a grid of wires.
- There are always 8 wires on it.
- Wires can be red, blue, yellow, black or white.
- In the following table, use only the column corresponding to the color of the wire connected to C3.
- Cut a wire if it is a specific color and is connected to a specific spot on the grid as indicated in the table.

A	B	C	D	
~	{	}		1
{	{			2
				3
~	{	}		4

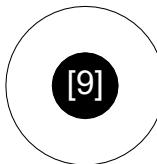
		Wire connected to C3 is				
		Black	Blue	Red	White	Yellow
Cut if color		is connected to:				
Yellow		D2	D1	D2	A2	D1
Blue		A2	C4	A1	C4	D4
White		D3	D2	D4	B3	B2
White		B2	C1	B4	A1	C1
Red		A1	B3	C4	B2	B3
Blue		C3	C2	C1	D3	B1
Black		B1	D4	A4	D2	B4
Red		C4	D3	B1	C1	C2
Yellow		A3	C3	A2	A4	A3
Yellow		D1	A1	B2	B4	A4

On the Subject of Combination Locks

This looks like a combination lock. I thought I was disarming this bomb, not unlocking it.

See Appendix B of original manual for battery identification reference.

See Appendix Two Factor for two factor identification reference.



Like a typical combination lock, this requires 3 numbers to unlock. Turn the dial to the right to the first number. Then turn it to the left for the second number. Finally, turn it to the right for the last number. That will unlock it!

If sequential numbers in the code are the same, perform a full revolution back to the same number.

How to decode the combination:

Each number ranges from 0-19. Refer to the table to determine each number. Be careful if there are two factor codes present because they change periodically!

First number:

1. Add the least significant digit of each two factor code together.
2. If there are no two factor codes, use the last digit of the serial number plus the number of solved modules.
3. Add the number of batteries.
4. Subtract 20 if the result is over 19.

Second number:

1. Add the most significant digit of each two factor code together.
2. If there are no two factor codes, use the number of modules on the bomb (including needy modules).
3. Add the number of solved modules.
4. Subtract 20 if the result is over 19.

Third number:

1. Add the first two numbers together.
2. Subtract 20 if the result is over 19.

Section 2: Needy Modules

Needy modules cannot be disarmed, but pose a recurrent hazard.

Needy modules can be identified as a module with a small 2-digit timer in the top center. Interacting with the bomb may cause them to become activated. Once activated, these needy modules must be tended to regularly before their timer expires in order to prevent a strike.

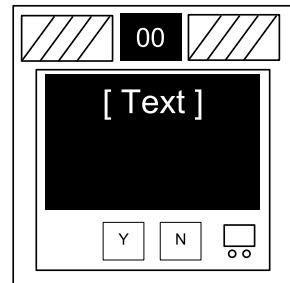
Stay observant: needy modules may reactivate at any time.

00

On the Subject of Venting Gas

Computer hacking is hard work! Well, it usually is. This job could probably be performed by a simple drinking bird pressing the same key over and over again.

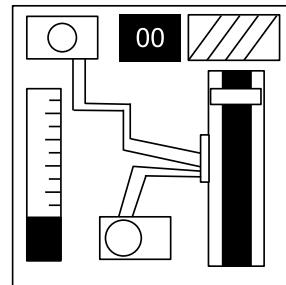
- Respond to the computer prompts by pressing "Y" for "Yes" or "N" for "No".



On the Subject of Capacitor Discharge

I'm going to guess that this is just meant to occupy your attention, because otherwise this is some shoddy electronics work.

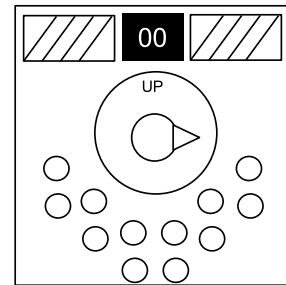
- Discharge the capacitor before it overloads by holding down the lever.



On the Subject of Knobs

Needlessly complicated and endlessly needy. Imagine if such expertise were used to make something other than diabolical puzzles.

- The knob can be turned to one of four different positions.
- The knob must be in the correct position when this module's timer hits zero.
- The correct position can be determined by the on/off configuration of the twelve LEDs.
- Knob positions are relative to the "UP" label, which may be rotated.



LED Configurations

Up Position:

		X		X	X
X	X	X	X		X

X		X		X	
	X	X		X	X

Down Position:

	X	X			X
X	X	X	X		X

X		X		X	
	X				X

Left Position:

				X	
X			X	X	X

				X	
				X	X

Right Position:

X		X	X	X	X
X	X	X		X	

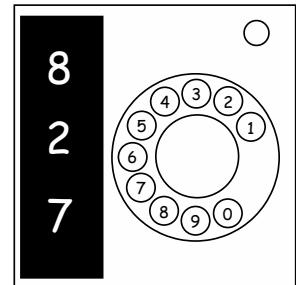
X		X	X		
X	X	X		X	

X = Lit LED

On the Subject of Rotary Phones

Hello, this is emergency services, please hold...

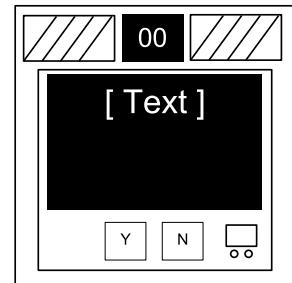
- The display will show 3 numbers, top to bottom, representing a single 3-digit number.
- Whenever the module activates, these numbers will change.
- Add the new number to the old one, take the 3 least significant digits, and enter the resulting number. This number is now your old number.
- If you gain a strike from this module, your old number is replaced with the currently displayed number.



On the Subject of Answering Questions

I hope you studied, it's quiz night!

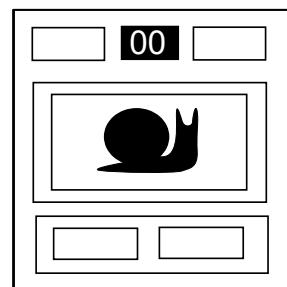
- Respond to the computer prompts by pressing "Y" for "Yes" or "N" for "No".



On the Subject of Who's That Monsplode?

Are you still a fan of some animated series from your childhood? It looks like you stumbled upon another fan.

- The shadow of a Monsplode™ will appear on the screen.
- Picking the name of the Monsplode™ correctly will add 20 seconds to the counter.
- You can't have more than 80 seconds in the counter.
- If you make a mistake, the bomb will register a strike.



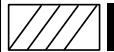
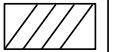
Monsplode™	Name	Monsplode™	Name	Monsplode™	Name
	Buhar		Lanaluff		Magmy
	Bob		Melbor		Docspplode
	Mountoise		Nibs		Clondar
	Aluga		Lugirit		Zapra
	Caadarim		Vellarim		Ukkens
	Flaurim		Gloorim		Zenlad
	Asteran		Violan		Pouse
	Myrchat		Cutie Pie		Percy

On the Subject of Math

Math is still easy. But is it easy when you have to answer questions over and over to stop an explosion? Only one way to find out.

Answer the question. Enter the numbers with the keypad and press '=' to submit your answer. Use '-' to toggle the sign.

Don't blow up!

	00		
1	2	3	0
4	5	6	-
7	8	9	=

Appendix A: Indicator Identification Reference

Labelled indicator lights can be found on the sides of the bomb casing.



Common Indicators

- SND
- CLR
- CAR
- IND
- FRQ
- SIG
- NSA
- MSA
- TRN
- BOB
- FRK

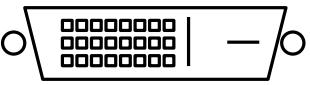
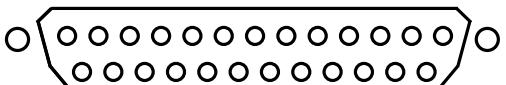
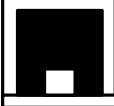
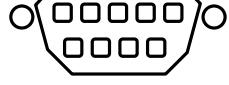
Appendix B: Battery Identification Reference

Common battery types can be found within enclosures on the sides of the bomb casing.

Battery	Type
	AA
	D

Appendix C: Port Identification Reference

Digital and analog ports can be found on sides of the bomb casing.

Port	Name
	DVI-D
	Parallel
	PS/2
	RJ-45
	Serial
	Stereo RCA

Appendix Math: Mathematical Terms Reference

Fibonacci Sequence

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

Prime Numbers

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29

Binary Conversions

Decimal	Binary Form
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
10	1010

Appendix: Grammar

for use with the English Test module

This appendix contains a brief overview of some grammatical distinctions used in the English Test module and Needy English Test module.

The **subject** is what is doing the action, and the **object** is what is receiving the action. e.g. In “I buy milk.” **I** is the subject and **milk** is the object.

their: belonging to them; there: that place; they're: they are
your: belonging to you; you're: you are
I, he, she, we, they: used in subjects; me, him, her, us, them: used in objects
less: used with uncountable nouns; fewer: used with countable nouns
who: used in subjects; whom: used in objects
defiantly: rebelliously; definitely: without doubt
lead: the metal or the present tense; led: the past tense and past participle
cite: declare a quoted source; site: location; sight: a view or vision
When you don't lay something else down, you lie down. The past tense of lay is laid . Confusingly, the past tense of lie is lay !
Literally means word for word . If you had “literally died” watching a video, your family and friends would be crying at your funeral about now.
If you write “should of ”, “could of ”, “would of ”, or “might of ”, no educated gentleman will take you seriously. Remember, “I do ” is to “I have done ” as “I could do ” is to “I could have done ”. (Exceptions apply, but very very rarely !)
its: belonging to it; it's: it is
capital: main city in a territory, money you put up to borrow something, or THIS KIND OF LETTER; capitol: big building, usually in a capital
affect: usually a verb, but noun when it means “display of emotion”; effect: almost always a noun; impact: physical force
i.e.: short for Latin <i>id est</i> , or “that is”; e.g.: short for Latin <i>exempli grātiā</i> , or “for example”
peak: summit; peek: sneak a look; pique: excite (usually interest)
allot: partition; a lot: very much; alot: (never correct)
lose: opposite of gain; loose: opposite of tight
than: (used to compare two things); then: at the time, or right after that
complement: when two parts complete each other; compliment: You look good today!
farther: physical distance; further: figurative distance
number: used for countable nouns; amount: used for uncountable nouns

Appendix: Grammar (Cont'd)

to: used in infinitives or destination; too: as well, or overly; two: 2
accept: This is fine; except: One of these things is not like the others
threw: past tense of "throw"; through: in at one side/end and out at the other
defuse: stop a bomb; diffuse: light softening out. Use "defuse" for tension.
statue: monument; stature: body height; statute: code of law
stationary: completely still; stationery: writing utensils
by: beside, from the mind of, etc.; buy: trade money for goods; bye: see you later
breath: the noun; breathe: the verb
drink: present tense; drank: past tense; drunk: past participle and adjective
discreet: <u>secret</u> or carefully subtle; discrete: separate
seas: plural of sea; sees: a form of "to see"; seize: to grab or take by force; C's: more than one C
weather: condition of the outside air; whether: if it is or if it isn't
raise: to make something go up; rays: narrow beams of light; raze: get rid of hair with a razor, or similarly destroy a wide area
wander: frolic; wonder: ponder
die: stop living, or a small cube for randomness; dice: more than one die
meat: flesh; meet: to see someone else; mete: to deal out something unpleasant
palate: roof of your mouth; palette: board to mix paint on, or a combination of colors; pallet: plates that cargo gets placed on
In this module, racket: a loud noise; racquet: a netted stick or paddle with which to hit a ball. (Especially in US English, racket can be used for both senses.)
perfect: 100% good or correct; prefect: person in a position of power, like an official or a heir

Other pairs/sets of words include: ad/add, aloud/allowed, altar/alter, arc/ark, baited/bated, base/bass, blew/blue, brake/break, carat/caret/carrot/karat, ceiling/sealing, cent/scent/sent, cereal/serial, choral/coral/corral, coarse/course, creak/creek, dear/deer, discussed/disgust, elicit/illicit, everyday/every day, faint/feint, faze/phase, find/fined, flair/flare, flea/flee, gait/gate, idle/idol/idyll, lighting/lightning/lightening, loan/lone/lend, oar/or/ore, pail/pale, pair/pare/pear, poor/pore/pour, praise/prays/preys, precedence/precedents/presidents, right/rite/wright/write, road/rode/rowed, ring/wring, role/roll, seam/seem, stairs/stares, steal/steel, straight/strait, though/thought/through/thorough, vain/vane/vein, vary/very, wait/weight, and weak/week.

For lack of space, the differences for these words have been omitted, but they should be fairly common knowledge to most English speakers.

APPENDIX CD43

Excerpt from Charles Dickens' "A Christmas Carol".

Scrooge knew he was dead? Of course he did. How could it be otherwise? Scrooge and he were partners for I don't know how many years. Scrooge was his sole executor, his sole administrator, his sole assign, his sole residuary legatee, his sole friend, and sole mourner. And even Scrooge was not so dreadfully cut up by the sad event, but that he was an excellent man of business on the very day of the funeral, and solemnised it with an undoubted bargain. The mention of Marley's funeral brings me back to the point I started from. There is no doubt that Marley was dead. This must be distinctly understood, or nothing wonderful can come of the story I am going to relate. If we were not perfectly convinced that Hamlet's Father died before the play began, there would be nothing more remarkable in his taking a stroll at night, in an easterly wind, upon his own ramparts, than there would be in any other middle-aged gentleman rashly turning out after dark in a breezy spot -- say Saint Paul's Churchyard for instance -- literally to astonish his son's weak mind.

Scrooge never painted out Old Marley's name. There it stood, years afterwards, above the warehouse door: Scrooge and Marley. The firm was known as Scrooge and Marley. Sometimes people new to the business called Scrooge Scrooge, and sometimes Marley, but he answered to both names. It was all the same to him.

Oh! But he was a tight-fisted hand at the grind-stone, Scrooge! A squeezing, wrenching, grasping, scraping, clutching, covetous, old sinner! Hard and sharp as flint, from which no steel had ever struck out generous fire; secret, and self-contained, and solitary as an oyster. The cold within him froze his old features, nipped his pointed nose, shrivelled his cheek, stiffened his gait; made his eyes red, his thin lips blue and spoke out shrewdly in his grating voice. A frosty rime was on his head, and on his eyebrows, and his wiry chin. He carried his own low temperature always about with him; he iced his office in the dogdays; and didn't thaw it one degree at Christmas.

External heat and cold had little influence on Scrooge. No warmth could warm, no wintry weather chill him. No wind that blew was bitterer than he, no falling snow was more intent upon its purpose, no pelting rain less open to entreaty. Foul weather didn't know where to have him. The heaviest rain, and snow, and hail, and sleet, could boast of the advantage over him in only one respect. They often 'came down' handsomely, and Scrooge never did.

Nobody ever stopped him in the street to say, with gladsome looks, 'My dear Scrooge, how are you? When will you come to see me?' No beggars implored him to bestow a trifle, no children asked him what it was o'clock, no man or woman ever once in all his life inquired the way to such and such a place, of Scrooge. Even the blind men's dogs appeared to know him; and when they saw him coming on, would tug their owners into doorways and up courts; and then would wag their tails as though they said, 'No eye at all is better than an evil eye, dark master!'

But what did Scrooge care! It was the very thing he liked. To edge his way along the crowded paths of life, warning all human sympathy to keep its distance, was what the knowing ones call 'nuts' to Scrooge.

APPENDIX CD44

Word and Letter Frequency in Charles Dickens' "A Christmas Carol".

Frequent 2 letter words

- 16x TO
- 11x NO
- 10x HE
- 9x IN
- 8x OF
- 7x IT

Frequent 3 letter words

1. 23x AND
2. 22x THE
3. 22x HIS
4. 14x WAS
5. 11x HIM
6. 4x OUT

Frequent 4 letter words

1. 6x SOLE
2. 4x THAT

Frequent 5 letter words

1. 4x THERE
2. 4x WOULD

Frequent 6 letter words

1. 4x MARLEY

Frequent 7 letter words

1. 12x SCROOGE

Frequent 8 letter words

1. 2x BUSINESS

Frequent 9 letter words

1. 2x SOMETIMES