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# BOMB DEFUSAL MANUAL

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[www.keeptalkinggame.com](http://www.keeptalkinggame.com)

Version 1  
Verification Code: 241

*Welcome to the dangerous and challenging world of bomb defusing.*

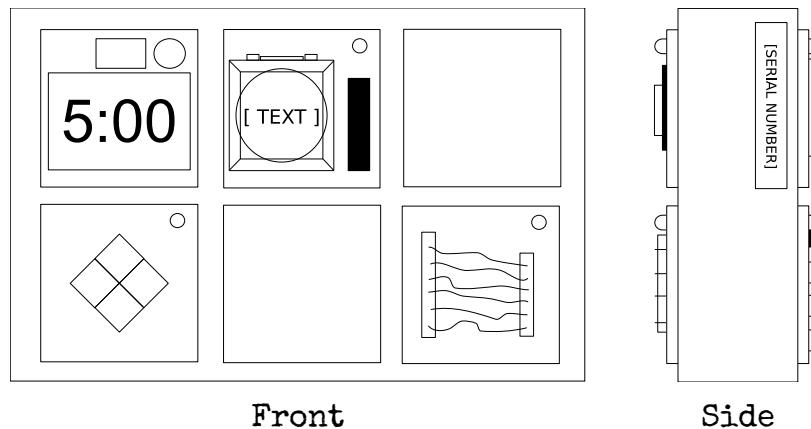
*Study this manual carefully; you are the expert. In these pages you will find everything you need to know to defuse even the most insidious of bombs.*

*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

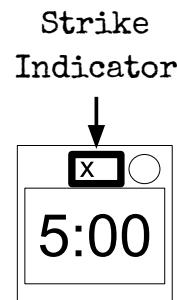
Each bomb will include up to 11 modules that must be disarmed. Each module is discrete and can be disarmed in any order.

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

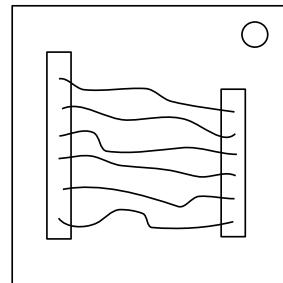
Modules can be identified by an LED in the top right corner.  
When this LED is lit green, the module has been disarmed.

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.

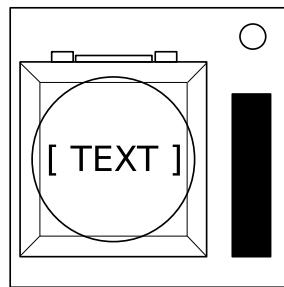
Otherwise, cut the fourth wire.

## 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

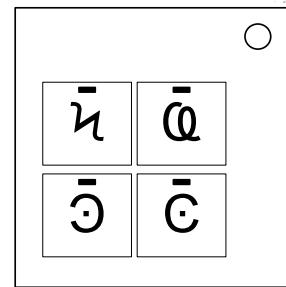
If you start holding the button down, a colored strip will light up on the right side of the module. Based on its color, you must release the button at a specific point in time:

- 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.

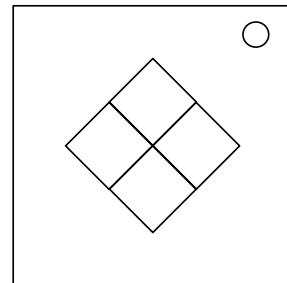
- Only one column below has all four of the symbols from the keypad.
- Press the four buttons in the order their symbols appear from top to bottom within that column.



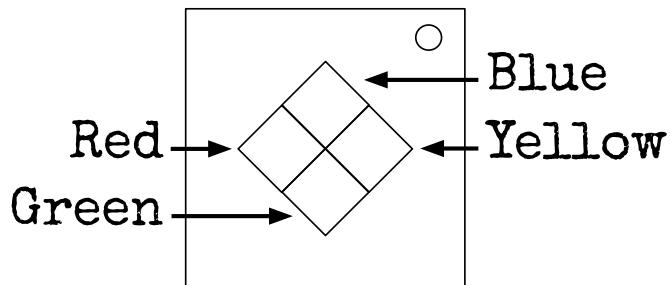
Q	Ё	©	б	Ψ	б
À	Ӯ	ӭ	҃	Ӯ	Ӯ
Ӷ	҃	ӭ	҃	Ӯ	*
ӷ	ӭ	҃	҃	҃	æ
Ӯ	★	҃	҃	҃	Ψ
Ӱ	Ӱ	Ӷ	҃	ӷ	ӵ
ӱ	ӱ	Ӷ	҃	★	Ω
Ӳ	★	Ӷ	Ӯ		

## 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

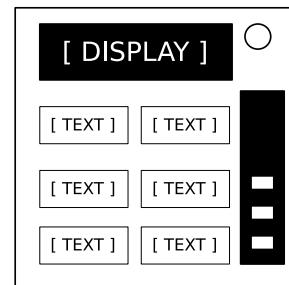
If the serial number does not contain a vowel:

		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:

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

**Step 2:**

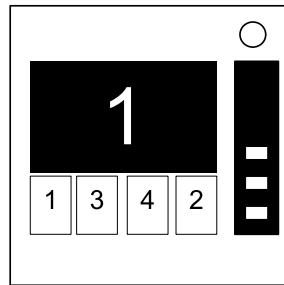
Using the label from step 1, push the first button that appears in its corresponding list:

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

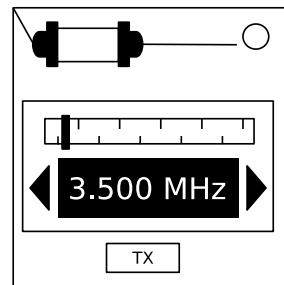
If the display is 3, press the button with the same label you pressed in stage 4.

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.

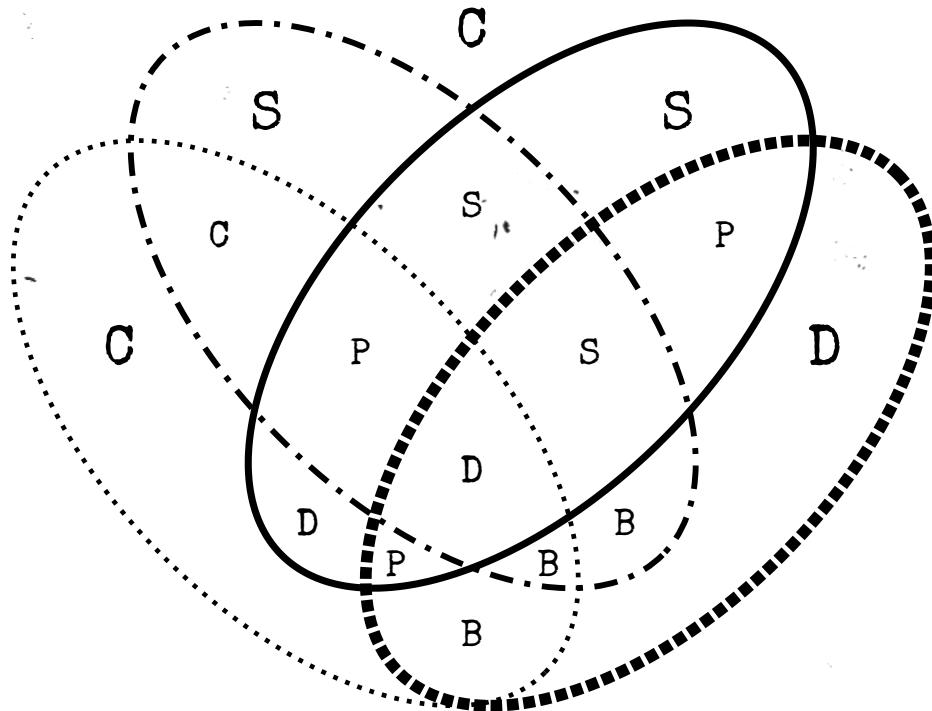
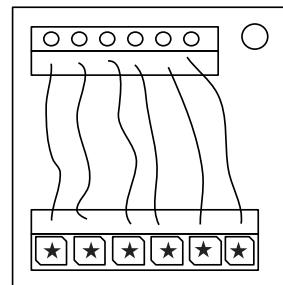
A	• —	U	• • —
B	— • • •	V	• • • —
C	— • — •	W	• — —
D	— • •	X	— • • —
E	•	Y	— • — —
F	• • — •	Z	— — • •
G	— — —		
H	• • • •		
I	• •		
J	• — — —		
K	— • —	0	— — — —
L	• — — •	1	• — — —
M	— —	2	• • — —
N	— •	3	• • • —
O	— — —	4	• • • • —
P	• — — •	5	• • • • •
Q	— — — •	6	— • • • •
R	• — — •	7	— — • • •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

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

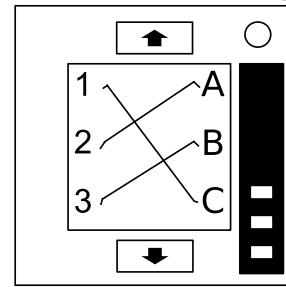
See Appendix B for battery identification reference.

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.

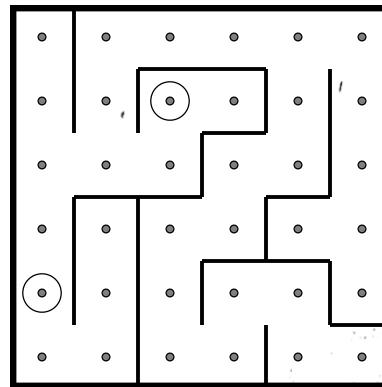
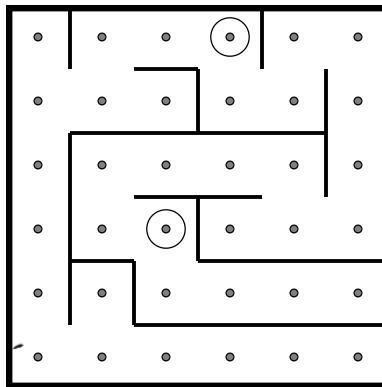
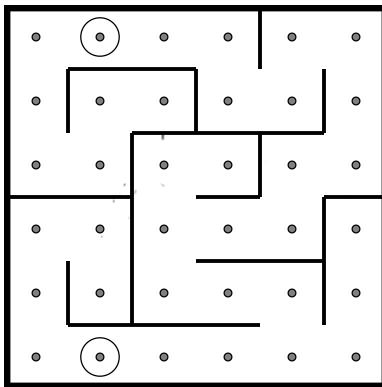
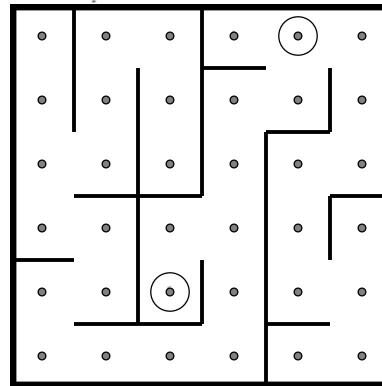
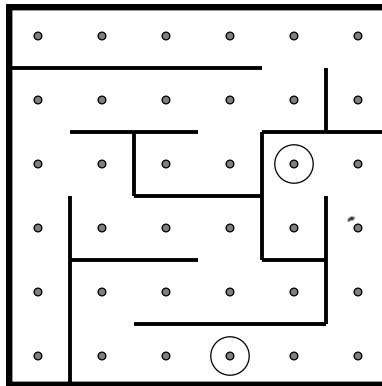
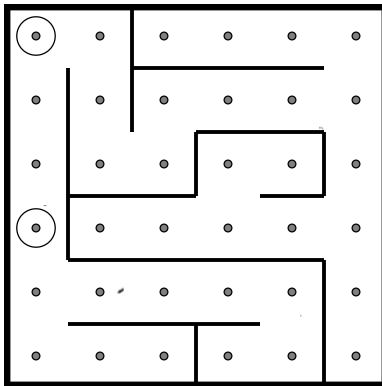
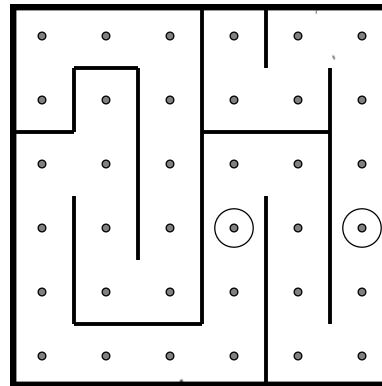
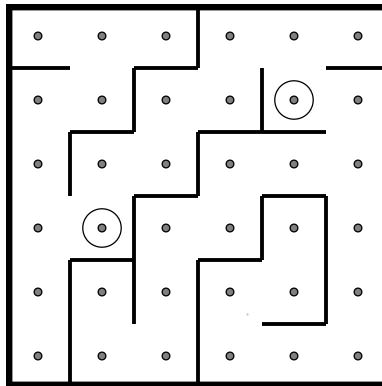
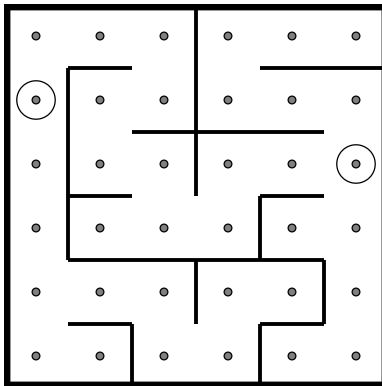
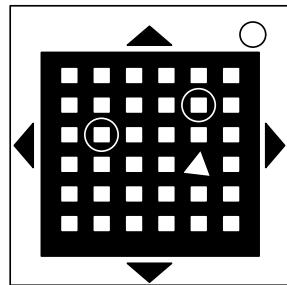


Red Wire Occurrences		Blue Wire Occurrences		Black Wire Occurrences	
Wire Occurrence	Cut if connected to:	Wire Occurrence	Cut if connected to:	Wire Occurrence	Cut if connected to:
First red occurrence	C	First blue occurrence	B	First black occurrence	A, B or C
Second red occurrence	B	Second blue occurrence	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.*

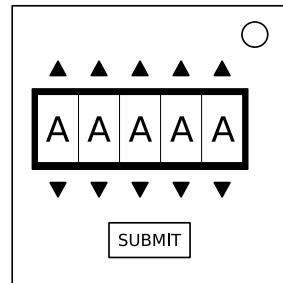
- Find the maze with matching circular markings.
- The defuser must navigate the white light to the red triangle using the arrow buttons.
- **Warning:** Do not cross the lines shown in the maze. These lines are invisible on the bomb.



## 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

## 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.

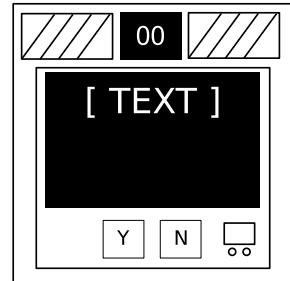
Stay observant: needy modules may reactivate at any time.

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## 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.*

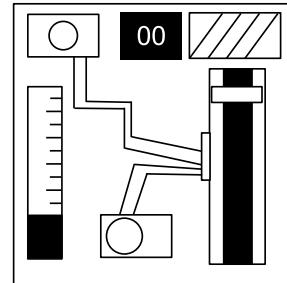
- Respond to the computer prompts by pressing "Y" for "Yes" or "N" for "No".



## On the Subject of Capacitor Discharge

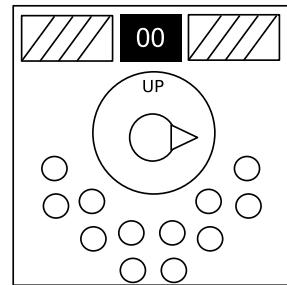
*I'm going to guess that this is just meant to occupy your attention, because otherwise this is some shoddy electronics work.*

- 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 have 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	

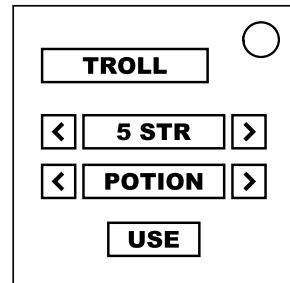
X		X	X		
X	X	X		X	

X = Lit LED

## On the Subject of 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 <sup>2</sup>	Force of gravity, in meters per second squared
101 kPa	Atmospheric pressure, in kilopascals

Item	Use if...
Balloon	Gravity is less than $9.3 \text{ m/s}^2$ 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 $12^\circ\text{C}$ , 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 $31^\circ\text{C}$ .
Ticket	The player is 4' 6" or taller, and gravity is at least $9.2 \text{ m/s}^2$ , and at most $10.4 \text{ m/s}^2$ .
Trophy	STR is greater than the first numeric digit of the serial number, or if fighting a Troll.

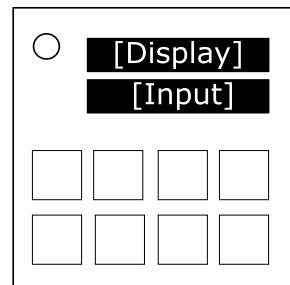
Enemy	STR	DEX	INT
Demon	50	50	50
Dragon	10	11	13
Eagle	4	7	3
Goblin	3	6	5
Golem	9	4	7
Troll	8	5	4
Lizard	4	6	3
Wizard	4	3	8

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 Anagrams

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

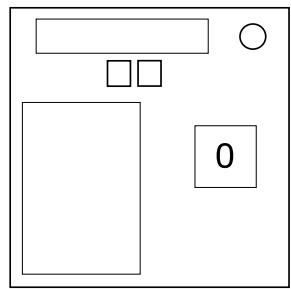
The display shows a word. Rearrange the letters to form another word. It's got to work. It just has to. Note that the status light is on the top left of the module.



## On the Subject of Assembly Code

*Why are registers important, when you are already modifying them!*

On the module, there are 3 displays. The left display will have 8 "codes", the top display will have a description of what a "code" does, and the right display tells you the position of the list you are in.



**The list on the left of the module is index-0.**

To solve the module, multiply the number of AA batteries by 2 and add 1. Modulo 8 and add 1 again. If there is any **Lines of code, Scripting, or Brainf---**, the number is 0. This number is the "code" you are going to solve for in each stage, where the "code" is the 3-5 letter word on the left of the module and the 2nd column in the list below.

Refer to the list below to get the description. You can also use the 2 buttons to cycle through the descriptions on the top of the module.

After you find the description of the correct code, input it by pressing the description box on top and the next stage will happen. Do this for a total of 3 times to solve the module.

Index	Code	Meaning
0	AAA	ASCII adjust AL after addition
1	AAD	ASCII adjust AX before division
2	AAM	ASCII adjust AX after multiplication
3	AAS	ASCII adjust AL after subtraction
4	ADC	Add with carry
5	ADD	Add
6	AND	Logical AND
7	CALL	Call procedure
8	CBW	Convert byte to word
9	CLC	Clear carry flag
10	CLD	Clear direction flag
11	CLI	Clear interrupt flag
12	CMC	Complement carry flag
13	CMP	Compare operands
14	CMPSB	Compare bytes in memory

17	DAA	Decimal adjust AL after addition
18	DAS	Decimal adjust AL after subtraction
19	DEC	Decrement by 1
20	DIV	Unsigned divide
21	ESC	Used with floating-point unit
22	HLT	Enter halt state
23	IDIV	Signed divide
24	IMUL	Signed multiply
25	IN	Input from port
26	INC	Increment by 1
27	INT	Call to interrupt
28	INTO	Call to interrupt if overflow
29	IRET	Return from interrupt
30	Jcc	Jump if condition
31	JCXZ	Jump if CX is zero
32	JMP	Jump
33	LAHF	Load FLAGS into AH register
34	LDS	Load pointer using DS
35	LEA	Load Effective Address
36	LES	Load ES with pointer
37	LOCK	Assert BUS LOCK# signal
38	LODSB	Load string byte
39	LODSW	Load string word
40	LOOP	Loop control
41	MOV	Move
42	MOVSB	Move byte from string to string
43	MOVSW	Move word from string to string
44	MUL	Unsigned multiply
45	NEG	Two's complement negation
46	NOP	No operation

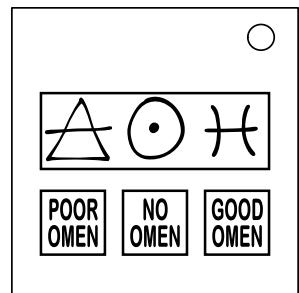
47	NOT	Negate the operand, logical NOT
48	OR	Logical OR
49	OUT	Output to port
50	POP	Pop data from stack
51	POPF	Pop FLAGS register from stack
52	PUSH	Push data onto stack
53	PUSHF	Push FLAGS onto stack
54	RCL	Rotate left (with carry)
55	RCR	Rotate right (with carry)
56	REPxx	Repeat MOVS/STOS/CMPS/LODS/SCAS
57	RET	Return from procedure
58	RETN	Return from near procedure
59	RETF	Return from far procedure
60	ROL	Rotate left
61	ROR	Rotate right
62	SAHF	Store AH into FLAGS
63	SAL	Shift Arithmetically left (signed shift left)
64	SAR	Shift Arithmetically right (signed shift right)
65	SBB	Subtraction with borrow
66	SCASB	Compare byte string
67	SCASW	Compare word string
68	SHL	Shift left (unsigned shift left)
69	SHR	Shift right (unsigned shift right)
70	STC	Set carry flag
71	STD	Set direction flag
72	STI	Set interrupt flag
73	STOSB	Store byte in string
74	STOSW	Store word in string
75	SUB	Subtraction
76	TEST	Logical compare (AND)

77	WAIT	Wait until not busy
78	XCHG	Exchange data
79	XLAT	Table look-up translation
80	XOR	Exclusive OR

## 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	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	
☿	-1	-1	0	0	1	1	0	0	0	0	-1	-1	
☿	-1	2	0	0	1	-2	1	0	2	-1	1	0	
♀♂	1	0	2	1	-1	1	1	1	0	-2	2	0	
♀♀	-1	0	0	-1	-2	1	2	1	1	0	0	-1	

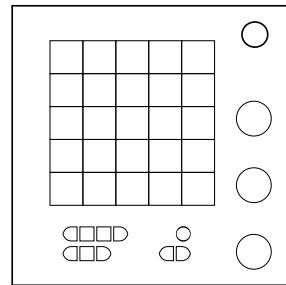
<u>Symbol</u>	<u>Element</u>	<u>Symbol</u>	<u>Planet</u>	<u>Symbol</u>	<u>Planet</u>
	Fire		Sun		Jupiter
	Water		Moon		Saturn
	Earth		Mercury		Uranus
	Air		Venus		Neptune
			Mars		Pluto

<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 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 torpedoes 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 Bitwise Operations

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

- There are 2 screens on the module:

- Bitwise operator (AND, OR, XOR, NOT)
- 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.

XOR	<input type="radio"/>
<input type="checkbox"/>	
0 0 1 0 1 1 1 1	
<b>SUBMIT</b>	

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		Last digit of serial number is odd
Less than 2 D batteries		Even number of modules
Less than 4 ports	LSB	2 or more batteries

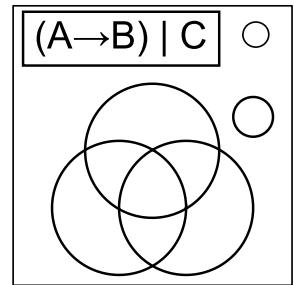
Here is a table of explanations of each bitwise operator:

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	<code>bit1 &amp;&amp; bit2</code>	<code>bit1    bit2</code>	<code>(bit1 &amp;&amp; !bit2)    (!bit1 &amp;&amp; bit2)</code>	<code>!bit1</code>

## 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.

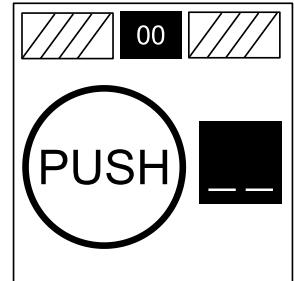


$X \wedge Y$ AND	$X \vee Y$ OR	$X \veebar Y$ XOR	$X \rightarrow Y$ IMPLIES
$X \mid Y$ NAND	$X \downarrow Y$ NOR	$X \leftrightarrow Y$ XNOR	$X \leftarrow Y$ IMPLIED BY

## On the Subject of Button Masher

*Just don't break the button, speed runners should know how it feels.*

- This needy module contains a button and a display.
- Upon activation, the needy will display a number between 25 and 45.
- You must press the button as many times as it says in the display in 20 seconds, or a strike will be recorded.
- If you press the button more than what the display intends, a strike will be recorded.

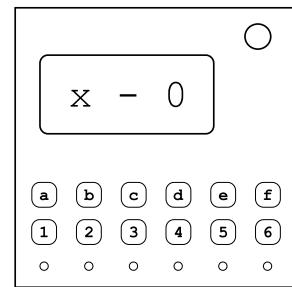


## On the Subject of Chess

*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.



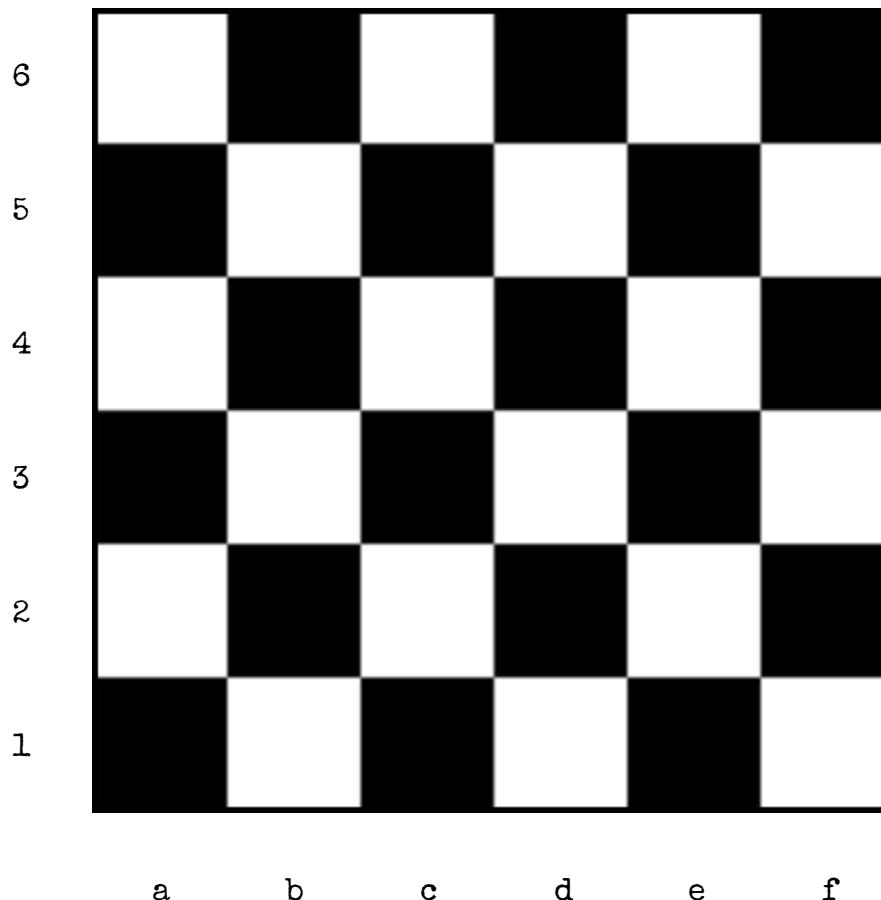
- There are six unique coordinates that represent six positions on the chessboard.
- Use the numbered buttons in the bottom row to browse through the different coordinates. A green LED below the button will indicate the position of the currently selected coordinate.
- Using the reference table below, 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><b>Position #1: Monarchy vs Theocracy</b></p> <p>Occupied by a king if Position #5 is occupied by a queen. Otherwise, the field is occupied by a bishop.</p>
<p><b>Position #2: Commander of the Army</b></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><b>Position #3: A Matter of Regents</b></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><b>Position #4: The Iron Tower</b></p> <p>Always occupied by a rook.</p>
<p><b>Position #5: Conflict between Good and Evil</b></p> <p>Occupied by a queen if the field is white. Otherwise, the field is occupied by a rook.</p>
<p><b>Position #6: The Scepter, the Sword, and the Crosier</b></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

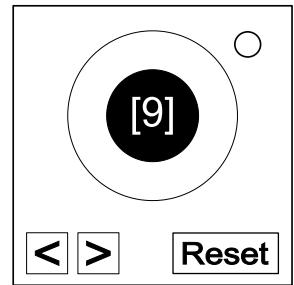


## On the Subject of Combination Locks

*This looks like a combination lock. I thought I was disarming this bomb, not unlocking it.*

*See Appendix B 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. If there are no two factor codes, use the last digit of the serial number plus the number of solved modules.
2. Add the number of batteries.
3. If the result is over 19, keep subtracting 20 until the result is between 0-19.

#### Second number:

1. Add the most significant digit of each two factor code together. If there are no two factor codes, use the number of modules on the bomb (including needy modules).
2. Add the number of solved modules.
3. If the result is over 19, keep subtracting 20 until the result is between 0-19.

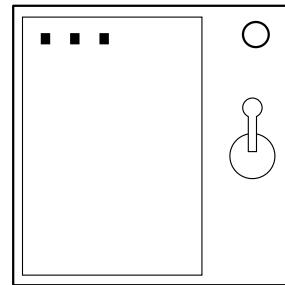
#### Third number:

1. Add the first two numbers together.
2. If the result is over 19, keep subtracting 20 until the result is between 0-19.

## 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 Derivatives

*Do you remember high school maths? Time to find out.*

Solve the module by solving all differential equations, normal mathematical rules apply.

You will need to solve the equations an amount of times equal to the bomb's starting time (in minutes) divided by 3, rounded up (max 10).

Entering an incorrect answer for an equation will cause a strike, but will still count as solving the equation.

If you enter something which the calculator isn't able to compute the buttons will flash red, but you will not get a strike.

Any correct derivative is accepted, you do not have to simplify.

Assume x is positive.

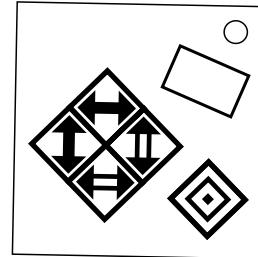
See Appendix A for basic differentiation rules.

Solve the following:				<input type="radio"/>
y =				
dy/dx =				
7	6	9	/	del
4	5	6	*	<sup>A</sup>
1	2	3	-	x
0	(	)	+	enter

## 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  $3\times 3$  grid of smaller  $3\times 3$  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  $3\times 3$  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  $3\times 3$  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.



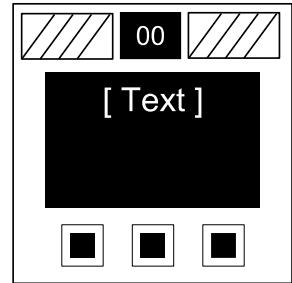
**NOTE:** This module is old, and the last digit glitches out when the first digit is zero. In addition, the wiring for the buttons is acting up, so the functions of the buttons may be swapped. Fortunately, the strikes from the submit button are only registered by the bomb if the displayed number is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

*You would think that the ports on the side of the bomb are used for something other than just for answering questions...*

- Respond to the computer prompts by pressing the button corresponding to the answer of the question on the main display.
- There are three questions asked every time the module activates.



## 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.

Question 1/3

We need to *diffuse* this bomb quickly.

diffuse  defuse

 SUBMIT 

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.

## 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.

<b>their:</b> belonging to them; <b>there:</b> that place; <b>they're:</b> they are
<b>your:</b> belonging to you; <b>you're:</b> you are
<b>I, he, she, we, they:</b> used in subjects; <b>me, him, her, us, them:</b> used in objects
<b>less:</b> used with uncountable nouns; <b>fewer:</b> used with countable nouns
<b>who:</b> used in subjects; <b>whom:</b> used in objects
<b>defiantly:</b> rebelliously; <b>definitely:</b> without doubt
<b>lead:</b> the metal or the present tense; <b>led:</b> the past tense and past participle
<b>cite:</b> declare a quoted source; <b>site:</b> location; <b>sight:</b> a view or vision
When you don't <b>lay</b> something else down, you <b>lie</b> down. The past tense of <u>lay</u> is <b>laid</b> . Confusingly, the past tense of <u>lie</u> is <b>lay</b> !

## Appendix: Grammar (Cont'd)

**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 *id est*, or “that is”; **e.g.:** short for Latin *exempli grātiā*, 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

**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

## Appendix: Grammar (Cont'd)

<b>breath:</b> the noun; <b>breathe:</b> the verb
<b>drink:</b> present tense; <b>drank:</b> past tense; <b>drunk:</b> past participle and adjective
<b>discreet:</b> <u>secret</u> or carefully subtle; <b>discrete:</b> separate
<b>seas:</b> plural of sea; <b>sees:</b> a form of “to see”; <b>seize:</b> to grab or take by force; <b>C's:</b> more than one C
<b>weather:</b> condition of the outside air; <b>whether:</b> if it is or if it isn't
<b>raise:</b> to make something go up; <b>rays:</b> narrow beams of light; <b>raze:</b> get rid of hair with a razor, or similarly destroy a wide area
<b>wander:</b> frolic; <b>wonder:</b> ponder
<b>die:</b> stop living, or a small cube for randomness; <b>dice:</b> more than one die
<b>meat:</b> flesh; <b>meet:</b> to see someone else; <b>mete:</b> to deal out something unpleasant
<b>palate:</b> roof of your mouth; <b>palette:</b> board to mix paint on, or a combination of colors; <b>pallet:</b> plates that cargo gets placed on
In this module, <b>racket:</b> a loud noise; <b>racquet:</b> a netted stick or paddle with which to hit a ball. (Especially in US English, racket can be used for both senses.)
<b>perfect:</b> 100% good or correct; <b>prefect:</b> person in a position of power, like an official or a heir

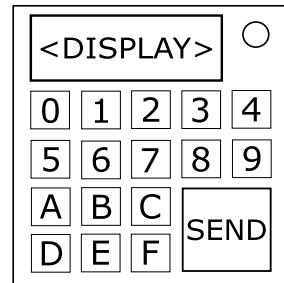
**Other pairs/sets of words include:** ad/add, aloud/allowed, altar/alter, arc/ark, baited/bated, base/bass, blew/blue, brake/break, carat/caret/carrot/karat, ceiling/sealing, cent/scent/sent, cereal/serial, choral/coral/corral, coarse/course, creak/creek, dear/deer, discussed/disgust, elicit/illicit, 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.

## On the Subject of Error Codes

All of a sudden "Blue Screen of Death" takes on a whole new meaning.

- This module contains a screen displaying four 2-digit hexadecimal error codes.
- Only one of the four error codes is necessary to determine the fix code.
- Use **Table 1** to determine which error code to use, labeled 1st, 2nd, 3rd, 4th going left to right.
- Convert the error code from hexadecimal (hex) to decimal (dec) (See **Table 3**).
- Subtract the decimal error code from 101 to get the decimal fix code (for example, if the decimal error code is 48, the decimal fix code would be  $101 - 48 = 53$ ).
- Use **Table 2** to determine which format the fix code must be entered in.
- Enter the full fix code in the proper format then press "Send" (See **Table 3**).
- Note: the fix code must include all appropriate leading zeros from the table: hexadecimal = 2 digits, decimal = 3 digits, octal = 3 digits, and binary = 7 digits.
- **Careful:** There is no backspace!



**Table 1:**

	Number of Batteries is Even (0, 2, 4, 6...)	Number of Batteries is Odd (1, 3, 5, 7...)
Serial Number DOES Contain a Vowel:	1st	2nd
Serial Number DOES NOT Contain a Vowel:	3rd	4th

**Table 2:**

	Number of Batteries is Even (0, 2, 4, 6...)	Number of Batteries is Odd (1, 3, 5, 7...)
Serial Number DOES Contain a Vowel:	Decimal (Dec)	Octal (Oct)
Serial Number DOES NOT Contain a Vowel:	Hexadecimal (Hex)	Binary

**Table 3:**

Dec	Oct	Hex	Binary
000	000	00	00000000
001	001	01	00000001
002	002	02	00000010
003	003	03	00000011
004	004	04	00000100
005	005	05	00000101
006	006	06	00000110
007	007	07	00000111
008	010	08	00001000
009	011	09	00001001
010	012	0A	00001010
011	013	0B	00001011
012	014	0C	00001100
013	015	0D	00001101
014	016	0E	00001110
015	017	0F	00001111
016	020	10	00100000
017	021	11	00100001
018	022	12	00100010
019	023	13	00100011
020	024	14	00101000
021	025	15	00101001
022	026	16	00101010
023	027	17	00101011
024	030	18	00110000
025	031	19	00110001
026	032	1A	00110100
027	033	1B	00110101
028	034	1C	00111000
029	035	1D	00111001
030	036	1E	00111100
031	037	1F	00111111
032	040	20	01000000
033	041	21	01000001

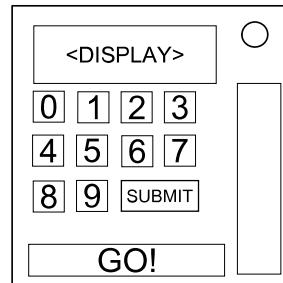
Dec	Oct	Hex	Binary
034	042	22	0100010
035	043	23	0100011
036	044	24	0100100
037	045	25	0100101
038	046	26	0100110
039	047	27	0100111
040	050	28	0101000
041	051	29	0101001
042	052	2A	0101010
043	053	2B	0101011
044	054	2C	0101100
045	055	2D	0101101
046	056	2E	0101110
047	057	2F	0101111
048	060	30	0110000
049	061	31	0110001
050	062	32	0110010
051	063	33	0110011
052	064	34	0110100
053	065	35	0110101
054	066	36	0110110
055	067	37	0110111
056	070	38	0111000
057	071	39	0111001
058	072	3A	0111010
059	073	3B	0111011
060	074	3C	0111100
061	075	3D	0111101
062	076	3E	0111110
063	077	3F	0111111
064	100	40	1000000
065	101	41	1000001
066	102	42	1000010
067	103	43	1000011

Dec	Oct	Hex	Binary
068	104	44	1000100
069	105	45	1000101
070	106	46	1000110
071	107	47	1000111
072	110	48	1001000
073	111	49	1001001
074	112	4A	1001010
075	113	4B	1001011
076	114	4C	1001100
077	115	4D	1001101
078	116	4E	1001110
079	117	4F	1001111
080	120	50	1010000
081	121	51	1010001
082	122	52	1010010
083	123	53	1010011
084	124	54	1010100
085	125	55	1010101
086	126	56	1010110
087	127	57	1010111
088	130	58	1011000
089	131	59	1011001
090	132	5A	1011010
091	133	5B	1011011
092	134	5C	1011100
093	135	5D	1011101
094	136	5E	1011110
095	137	5F	1011111
096	140	60	1100000
097	141	61	1100001
098	142	62	1100010
099	143	63	1100011
100	144	64	1100100
101	145	65	1100101

## 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 number.
  - If there is a serial port present, add 14 to your number.
  - If the serial number contains a letter F, A, S or T, subtract 5 from your number.
  - If there is an RJ-45 port present, add 27 to your number.
  - If the bomb has more than 3 batteries, subtract 15 from your 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.*

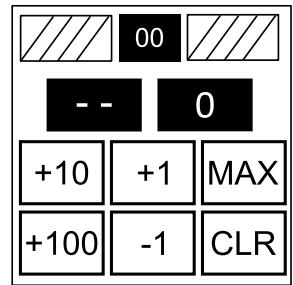


Right letter:	A	B	C	D	E	G	K	N	P	S	T	X	Z	
Left letter:	A	25	11	53	97	02	42	51	97	12	86	55	73	33
B	54	07	32	19	84	33	27	78	26	46	09	13	58	
C	86	37	44	01	05	26	93	49	18	69	23	40	22	
D	54	28	77	93	11	00	35	61	27	48	13	72	80	
E	99	36	23	95	67	05	26	17	44	60	26	41	67	
G	74	95	03	04	56	23	54	29	52	38	10	76	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 Hex To Decimal

*Be happy you are only doing this for one game session. At least you weren't Nintendo in the 1980's figuring out how to program the NES with 0's and 1's.*

The main display at the top left displays a random hexadecimal character.



The input display at the top right displays the number the defuser has currently added.

Starting from 0, the defuser must add 100, 10, 1, or subtract 1 to get the desired number.

The defuser may also press MAX to set the display to 255.

If the defuser messes up, they may reset by pressing the "CLR" button.

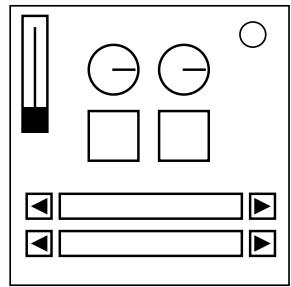
- To find the desired number, use the table below:

	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-A	-B	-C	-D	-E	-F
0-	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1-	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2-	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3-	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4-	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5-	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6-	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7-	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8-	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9-	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A-	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B-	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C-	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D-	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E-	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F-	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

## 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**

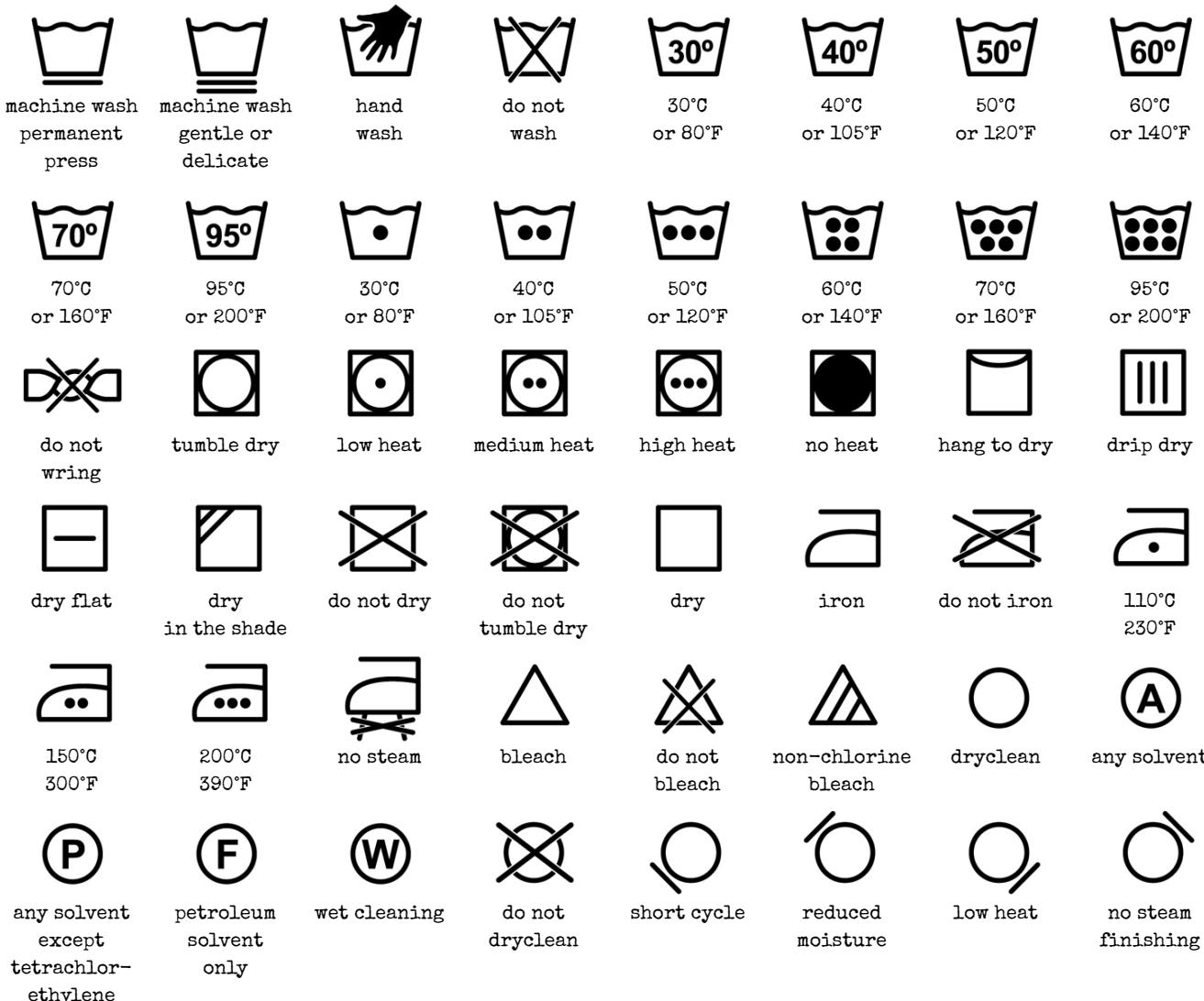
CLOTHING ITEM	WASHING	DRYING	IRONING	SPECIAL
0 Corset	140°F	Dry Flat	2 dots	△
1 Shirt	105°F		No steam	No Tetrachlorethylene
2 Skirt	30°C	Hang To Dry		Reduced Moisture
3 Skort		Tumble Dry	3 Dots	Circle Top Left
4 Shorts	Do Not Wring	Shade	150°C	
5 Scarf	95°C	Dry		Do not Dry Clean

**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	W
5 Leather	Do Not Wash	Do Not Dry	Do Not Iron	

**Table L43: Clothing Color Reference**

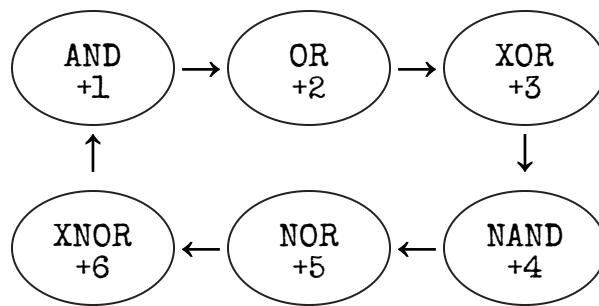
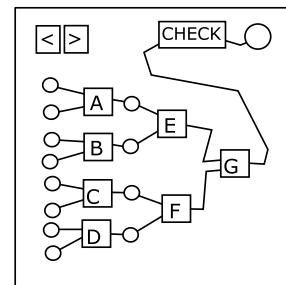
	CLOTHING COLOR	WASHING	DRYING	IRONING	SPECIAL
0	Ruby Fountain	140°F		Do Not Iron	
1	Star Lemon Quartz		Dry Flat	Iron	
2	Sapphire Springs	80°F	Tumble Dry		
3	Jade Cluster	30°C		300°F	
4	Clouded Pearl		Low Heat	No steam	
5	Malinite	60°C	Medium Heat		

**Laundry Symbol Reference**

## On the Subject of Logic Gates

There are only 10 types of bomb experts: those who understand logic gates, and those who don't.

The module contains a circuit of 7 logic gates, lettered A through G. Logic gates are explained on the second page. The circuit has 8 inputs and 1 output. Determine all gate types and find an input configuration that will set the final output to on.



- The first row of 8 LEDs tell you the input states. The second row of 4 LEDs tell you the output states of gates A through D. Use the arrow buttons to cycle through different input configurations, and determine the gate types of the first four gates.
- One gate type will occur twice on the circuit, all others once. In the following rules, if the found gate type already occurs, and you already found the duplicate, continue taking single steps until you find an available gate type.
- To find the gate type of gate E:
  - Start at the gate type of gate A in the diagram above.
  - Take the  $+n$  number of the gate type of gate B. Take that many steps following the arrows.
- To find the gate type of gate F:
  - Start at the gate type of gate E in the diagram above.
  - Take the  $+n$  number of the gate type of gate C. Take that many steps.
- To find the gate type of gate G:
  - Start at the gate type of gate F in the diagram above.
  - Take the  $+n$  number of the gate type of gate D. Take that many steps.
- Once you've established all gate types, cycle to an input configuration that will set the final output to on. Press 'CHECK'. If the output is off, you've earned a strike.

A logic gate is an elementary building block of a digital circuit. Most logic gates have two inputs and one output. At any given moment, every input and every output is either off (0, false) or on (1, true).

There are seven basic logic gates: NOT, AND, OR, XOR, NAND, NOR and XNOR. The NOT gate has one input and one output. The others have two inputs and one output. Inputs are normally drawn on the left, outputs on the right.

NOT	Has only one input. True becomes false, false becomes true. This gate will not be used on the module directly.
AND	When both inputs are true, the output is true. Otherwise, the output is false.
OR	When either or both inputs are true, the output is true. When both inputs are false, the output is false.
XOR	(Exclusive-OR) If either, but not both, inputs are true, the output is true. If neither or both inputs are true, the output is false.
NAND	It operates as an AND gate followed by a NOT gate. When both inputs are true, the output is false. Otherwise, the output is true.
NOR	It operates as an OR gate followed by a NOT gate. When either or both inputs are true, the output is false. When both inputs are false, the output is true.
XNOR	(Exclusive-NOR) It operates as an XOR gate followed by a NOT gate. If either, but not both, inputs are true, the output is false. If neither or both inputs are true, the output is true.

INPUT		OUTPUT					
		AND	OR	XOR	NAND	NOR	XNOR
0	0	0	0	0	1	1	1
0	1	0	1	1	1	0	0
1	0	0	1	1	1	0	0
1	1	1	1	0	0	0	1

## On the Subject of Modern Cipher

The Roman warlord Caesar had his own personal way to encrypt his data. We could think about him as the father of the modern cryptography. But you are a qualified soldier so you won't have problems in decoding our message, don't you?

You are given an encrypted word. Decrypt it, write it in the second box and press OK to solve the module.

To decrypt the word start by finding the key.

Add every digit on the serial and then, referring to "Letter-Number Relation" below, follow the cases to find your word.

Keep in mind that if you have strikes\*, you must add those strikes to the resulting key.

TEXT	<input type="text"/>	<input checked="" type="radio"/>
TEXT	<input type="text"/>	<input type="radio"/>
Q	<input type="checkbox"/>	<input type="checkbox"/>
W	<input type="checkbox"/>	<input type="checkbox"/>
E	<input type="checkbox"/>	<input type="checkbox"/>
R	<input type="checkbox"/>	<input type="checkbox"/>
T	<input type="checkbox"/>	<input type="checkbox"/>
Y	<input type="checkbox"/>	<input type="checkbox"/>
U	<input type="checkbox"/>	<input type="checkbox"/>
I	<input type="checkbox"/>	<input type="checkbox"/>
O	<input type="checkbox"/>	<input type="checkbox"/>
P	<input type="checkbox"/>	<input type="checkbox"/>
A	<input type="checkbox"/>	<input type="checkbox"/>
S	<input type="checkbox"/>	<input type="checkbox"/>
D	<input type="checkbox"/>	<input type="checkbox"/>
F	<input type="checkbox"/>	<input type="checkbox"/>
G	<input type="checkbox"/>	<input type="checkbox"/>
H	<input type="checkbox"/>	<input type="checkbox"/>
J	<input type="checkbox"/>	<input type="checkbox"/>
K	<input type="checkbox"/>	<input type="checkbox"/>
L	<input type="checkbox"/>	<input type="checkbox"/>
Z	<input type="checkbox"/>	<input type="checkbox"/>
X	<input type="checkbox"/>	<input type="checkbox"/>
C	<input type="checkbox"/>	<input type="checkbox"/>
V	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>
N	<input type="checkbox"/>	<input type="checkbox"/>
M	<input type="checkbox"/>	<input type="checkbox"/>

### Case 01: The serial number contains a vowel:

Every letter of the word must be shifted backwards by the key

Keep in mind that if you go under the 0, the next number will be 25 because numbers go only from 0 to 25.

### Case 02: The bomb contains more than 3 batteries:

Every letter of the word must be shifted forwards by the key

Keep in mind that if you go over the 25, the next number will be 0 because numbers go only from 0 to 25.

### Case 03: There is a serial port:

If this is your first word, refer to Case 01, otherwise go on.

Add to the key the number of letters of the last word you decrypted, then proceed as in Case 01.

Keep in mind that if you go under the 0, the next number will be 25 because numbers go only from 0 to 25.

### Case 04: None of the previous cases matches:

Add to the key the number of solved modules at the moment of the word generation then proceed as in Case 02.

Keep in mind that if you go over the 25, the next number will be 0 because numbers go only from 0 to 25.

\*You want to add only the strikes that you have when the word is generated.

## Letter-Number Relation

Letter	Number
Q	0
W	1
E	2
R	3
T	4
Y	5
U	6
I	7
O	8
P	9
A	10
S	11
D	12
F	13
G	14
H	15
J	16
K	17
L	18
Z	19
X	20
C	21
V	22
B	23
N	24
M	25

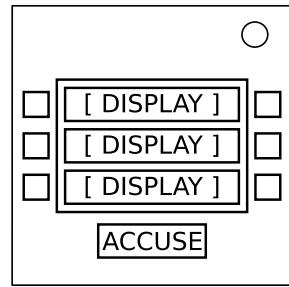
## On the Subject of Murder

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 on the next page 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 Flag Identification

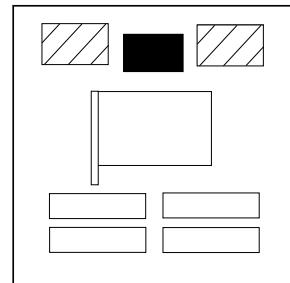
*Only flag nerds and vexillologists will reach level Guinea-Bissau.*

This needy module displays a flag on a flagpole and four buttons beneath it.

When the needy module activates, a random flag will be displayed. Each button will display the name of a country. To disarm the needy, press the button that displays the name of the country that corresponds to the shown flag. You have 45 seconds to disarm the module.

A strike will be incurred when a wrong button is pressed. The module will be deactivated after a wrong button press.

[Here](#) is a website that shows all flags of 195 countries of the world with their names.



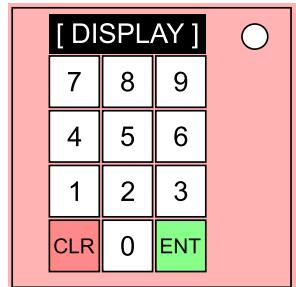
## On the Subject of Number Pads

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 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 fewer 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 fewer yellow numbered buttons, take the first path and add 1 to each digit (if a digit is 9, it becomes 0).

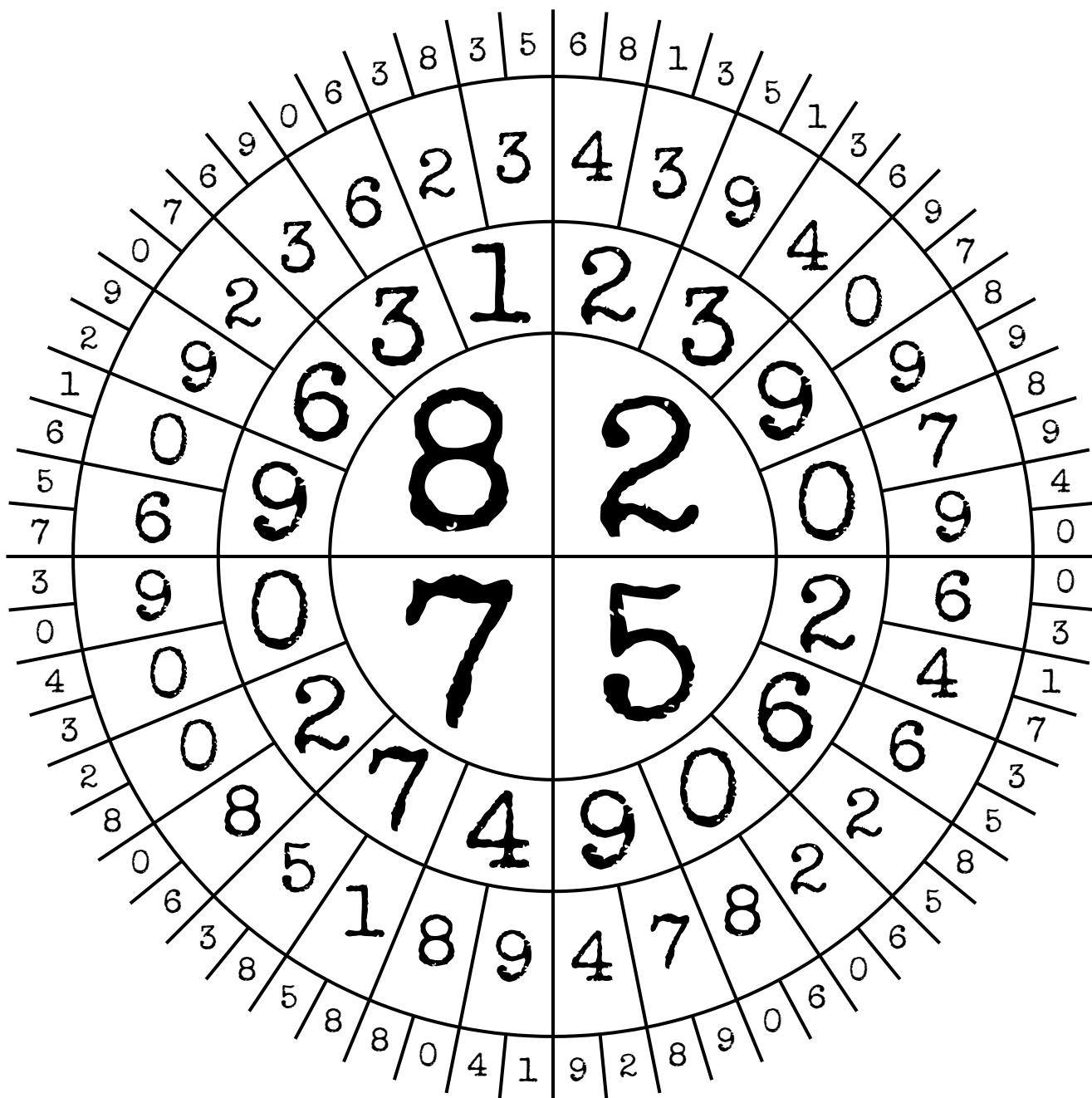
Otherwise, take the second path.

**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.

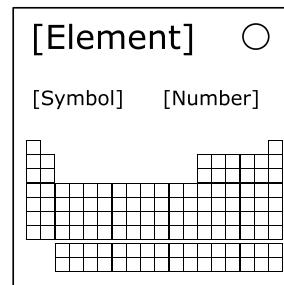
If neither of the above criteria is met, swap the first and fourth digits.

Finally, if the sum of all the digits in the code is even, reverse the code.**Wheel Chart****Colorblind helper:** Hold the CLR button.

## On the Subject of the Periodic Table

What do you do with a sick defuser? If you can't helium, and you can't curium, then you might as well barium.

- This module shows an element's **name**, a symbol, a number and the periodic table of elements.
- Follow the steps below and press the button with the same atomic number in the periodic table that is calculated in Step 5.
- Pressing the right button will solve the module.
- Pressing the wrong button will end up in a strike.
- The Periodic Table can be found below or [here](#).



### Step 1:

- Find the atomic number of the shown Element's Name.
- Add the number of batteries to this number.
- Multiply this number with the corresponding colour in Table 1.

### Step 2:

- Find the atomic number of the shown Symbol.
- Add the number of ports to this number.
- Multiply this number with the corresponding colour in Table 1.

### Step 3:

- Find the atomic number of the shown Number :P.
- Add the number of indicators to this number.
- Multiply this number with the corresponding colour in Table 1.

### Step 4:

- Find the atomic number of the coloured button.
- The squares with stars do not count!*
- Add the sum of the digits in the serial number to this number.
- Multiply this number with the corresponding colour in Table 1.

### Step 5:

- Add up all the final numbers from the previous steps.
- Subtract 118 from this number until the number is between 1 and 118 (1 and 118 INCLUDING).
- When at 0 or lower: You have gone too far!*

### Table 1

Colour	Number
Red	1
Orange	2
Yellow	3
Green	4
Blue	5
White/Grey	6

**Periodic Table of the Elements**

The diagram illustrates the periodic table with various annotations:

- Standard atomic weight or most stable mass number:** 55.845
- Atomic number:** 26
- Chemical symbol:** Fe
- Name:** Iron
- Electron configuration blocks:** s, d, p, f
- Radioactive elements:** Indicated by a yellow radiation symbol and masses in parentheses.
- Periodic Grouping:** Groups 1, 2, 13-18, and 17-18 are highlighted.

Group	1	2	13	14	15	16	17	18										
1	H Hydrogen 1.008	Li Lithium 6.94	B Boron 10.81	C Carbon 12.011	N Nitrogen 14.007	O Oxygen 15.999	F Fluorine 18.998	He Helium 4.0026										
2	Be Beryllium 9.0122	Mg Magnesium 24.305	Al Aluminum 26.982	Si Silicon 28.085	P Phosphorus 30.974	S Sulfur 32.06	Cl Chlorine 35.45	Ne Neon 20.180										
3	Na Sodium 22.990	Mg Magnesium 11.97	Sc Scandium 44.956	Ti Titanium 47.867	V Vanadium 50.942	Cr Chromium 51.996	Mn Manganese 54.938	Fe Iron 55.845	Co Cobalt 58.933	Ni Nickel 58.933	Cu Copper 63.546	Zn Zinc 65.38	Ga Gallium 69.723	Ge Germanium 72.630	As Arsenic 74.922	Se Selenium 78.971	Br Bromine 79.904	Kr Krypton 83.798
4	K Potassium 39.088	Ca Calcium 40.078	Sc Scandium 41.956	Ti Titanium 47.867	V Vanadium 50.942	Cr Chromium 51.996	Mn Manganese 54.938	Fe Iron 55.845	Co Cobalt 58.933	Ni Nickel 58.933	Cu Copper 63.546	Zn Zinc 65.38	Ga Gallium 69.723	Ge Germanium 72.630	As Arsenic 74.922	Se Selenium 78.971	Br Bromine 79.904	Kr Krypton 83.798
5	Rb Rubidium 65.468	Sr Strontium 87.62	Y Yttrium 88.906	Zr Zirconium 91.224	Nb Niobium 92.906	Mo Molybdenum 95.96	Tc Technetium (98)	Ru Ruthenium 101.07	Pd Rhodium 102.91	Rh Rhodium 103.42	Ag Silver 107.87	Cd Cadmium 112.41	In Indium 114.82	Sn Tin 116.71	Sb Antimony 121.76	Te Tellurium 127.60	I Iodine 128.90	Xe Xenon 131.29
6	Cs Cesium 132.91	Ba Barium 137.33	*	Hf Hafnium 178.49	Ta Tantalum 180.96	W Tungsten 183.84	Re Rhenium 186.21	Os Osmium 190.23	Ir Iridium 192.22	Pt Platinum 196.08	Au Gold 196.97	Hg Mercury 200.59	Tl Thallium 204.38	Pb Lead 207.2	Bi Bismuth 208.98	Po Polonium 210.84	At Astatine 210.85	Rn Radon (220) 86
7	Fr Francium (223)	Ra Radium (226)	**	Rf Rutherfordium (261)	Db Dubnium (262)	Sg Seaborgium (266)	Bh Bohrium (264)	Hs Hassium (277)	Mt Meitnerium (268)	Ds Darmstadtium (271)	Rg Roentgenium (272)	Cn Copernicium (285)	Nh Nihonium (284)	Fl Flerovium (289)	Mc Moscovium (289)	Lv Livermorium (292)	Ts Tennessine (294)	Og Oganesson (294)
			*	La Lanthanum 138.91	Ce Cerium 140.12	Pr Praseodymium 140.91	Nd Neodymium 144.24	Pm Promethium 145.00	Sm Samarium 150.36	Eu Europium 151.96	Gd Gadolinium 157.25	Tb Terbium 158.93	Dy Dysprosium 162.50	Ho Holmium 164.93	Er Erbium 167.25	Tm Thulium 168.93	Yb Ytterbium 173.05	Lu Lutetium 174.97
			**	Ac Actinium (227)	Th Thorium 232.04	Pa Protactinium 231.04	U Uranium 238.03	Np Neptunium 237.92	Pu Plutonium (244)	Am Americium (243)	Cm Curium (247)	Bk Berkelium (247)	Cf Californium (251)	Es Einsteinium (252)	Fm Fermium (257)	Md Mendelevium (258)	No Nobelium (259)	Lr Lawrencium (262)

**Legend:**

- Hg = liquid**
- H = gas**
- \*** Lanthanides (Ce-Lu)
- \*\*** Actinides (Ac-Lr)

**Colors:**

## On the Subject of Piano Keys

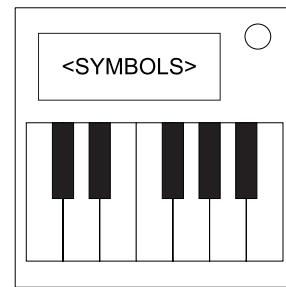
*What do you get when you drop a piano down a mine shaft? A flat minor.*

*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.*

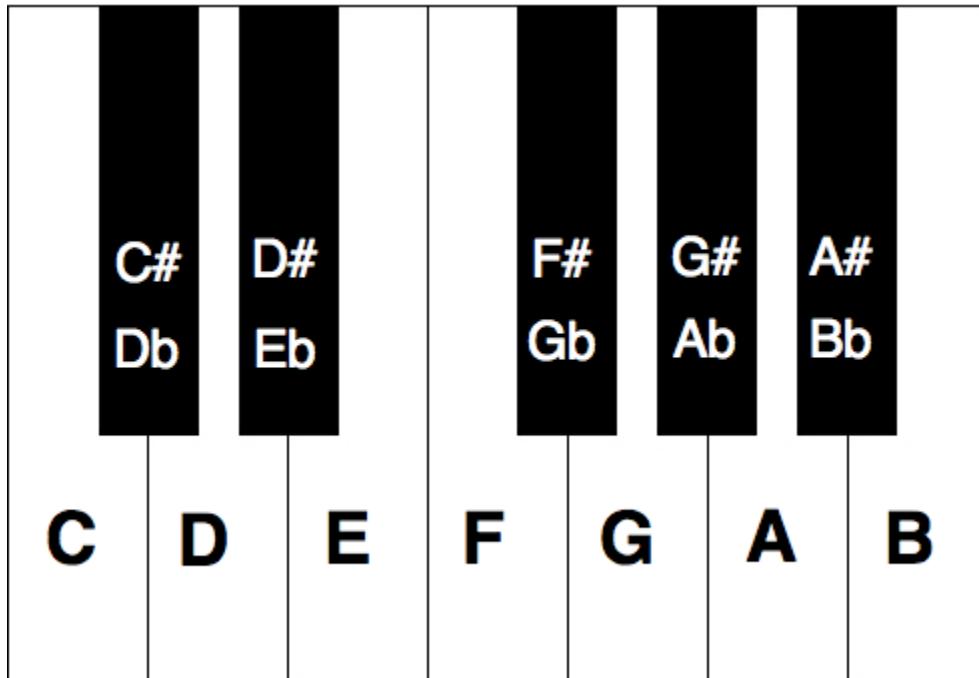


- A piano keys module will present with 3 musical symbols in the top indicator and a 12-note keyboard to input with.
- Each rule consists of one or more required symbol(s) and optional further requirements based on the bomb casing.
- Follow the list of rules down until one matches the criteria for the 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♭
B	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   B	(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

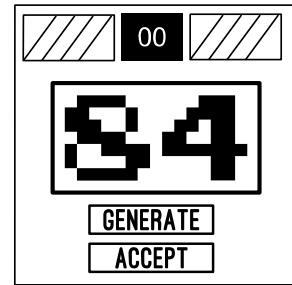
Use the following graphic as a reference to how tones are mapped onto a standard 12-note piano/keyboard.



## On the Subject of Random Number Generator

*We are now at the mercy of RNGesus.*

- When the module activates, there will be two tildes (~) on the display.
- Hit "Generate" to generate random numbers until you come across a number that matches the rules that apply.
- Once you find a number that applies, hit "Accept."



### If the last digit of the serial number is...

**Odd:** The number must be odd.

**Even:** The number must be even.

### If a vowel in the serial number is...

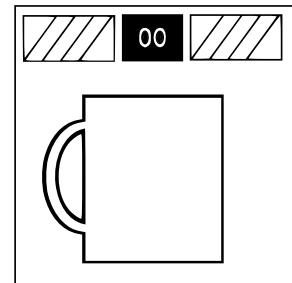
**Present:** The number must be in between 0 – 49.

**Absent:** The number must be in between 50 – 99.

## On the Subject of Refill that Beer!

*You don't want to end up getting drunk now, do ya?*

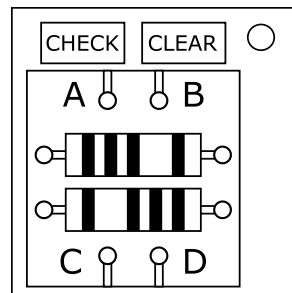
- This needy module requires you to refill the beer before it goes empty.
- You can do so anytime, but you'll have to drink every time you hit refill.



## 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  $\Omega$  is calculated as follows:
  1. Take the first two digits of the bomb's serial number.  
e.g. **2E7X19** → **27**, **ZJ3MLN** → **3**, **ABCDEF** → **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  $0\Omega$  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**,  $0\Omega$  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.

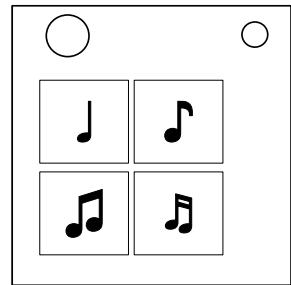
Color	First Band	Second Band	Multiplier
Black	0	0	$1\Omega$
Brown	1	1	$10\Omega$
Red	2	2	$100\Omega$
Orange	3	3	$1,000\Omega$
Yellow	4	4	$10,000\Omega$
Green	5	5	$100,000\Omega$
Blue	6	6	$1,000,000\Omega$
Violet	7	7	$10,000,000\Omega$
Gray	8	8	—
White	9	9	—
Gold	—	—	$0.1\Omega$
Silver	—	—	$0.01\Omega$

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

## 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**
$\text{H } \frac{4}{4} \text{ } \begin{smallmatrix} \text{p} & \text{p} & \text{p} & \text{p} \\ \text{p} & \text{p} & \text{p} & \text{p} \end{smallmatrix} \text{ } \begin{smallmatrix} \text{p} \\ 3 \\ \text{p} \\ 3 \end{smallmatrix} \text{ : }$	$\text{J } 2 / \text{J P}$	***	$\text{J } 2 / \text{J P}$	$\text{J } 2 / \text{J P}$
$\text{H } \frac{4}{4} \text{ } \begin{smallmatrix} \text{p} & \text{p} \\ \text{p} & \text{p} \end{smallmatrix} \text{ : }$	$\text{J } 1 / \text{J P}$	$\text{J P} / \text{J P}$	$\text{J P} / \text{J 1}$	$\text{J } 1 / \text{J } 1$
$\text{H } \frac{4}{4} \text{ } \begin{smallmatrix} \text{p} & \text{p} \\ \text{p} & \text{p} \end{smallmatrix} \text{ } \begin{smallmatrix} \text{p} & \text{p} \\ \text{p} & \text{p} \end{smallmatrix} \text{ : }$	$\text{J } 1 / \text{J P}$	$\text{J } 1 / \text{J } 1$	$\text{J P} / \text{J P}$	$\text{J P} / \text{J } 1$
$\text{H } \frac{4}{4} \text{ } \begin{smallmatrix} \text{p} & \text{p} \\ \text{p} & \text{p} \end{smallmatrix} \text{ } \begin{smallmatrix} \text{p} \\ 3 \end{smallmatrix} \text{ : }$	$\text{J P} / \text{J P}$	$\text{J } 1 / \text{J P}$	$\text{J } 1 / \text{J P}$	$\text{J } 1 / \text{J P}$
$\text{H } \frac{4}{4} \text{ } \begin{smallmatrix} \text{p} & \text{p} \\ \text{p} & \text{p} \end{smallmatrix} \text{ } \text{p} \text{ : }$	$\text{J } 1 / \text{J P}$	$\text{J P} / \text{J P}$	$\text{J } 1 / \text{J P}$	$\text{J P} / \text{J } 1$
$\text{H } \frac{4}{4} \text{ } \begin{smallmatrix} \text{p} & \text{p} \\ \text{p} & \text{p} \end{smallmatrix} \text{ } \begin{smallmatrix} \text{p} \\ 3 \end{smallmatrix} \text{ : }$	$\text{J } 1 / \text{J } 1$	$\text{J P} / \text{J } 1$	$\text{J P} / \text{J P}$	$\text{J P} / \text{J } 1$
$\text{H } \frac{4}{4} \text{ } \begin{smallmatrix} \text{p} & \text{p} \\ \text{p} & \text{p} \end{smallmatrix} \text{ } \text{p} \text{ : }$	$\text{J P} / \text{J } 1^*$	$\text{J P} / \text{J } 1^*$	$\text{J P} / \text{J } 1^*$	$\text{J P} / \text{J P}^*$

\*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.
- ▢▢▢ <sub>3</sub> **Eighth Note Triplet:**\* Each note in this triplet lasts for a third of the beat.

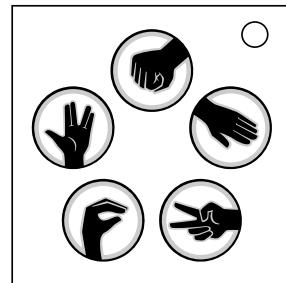
\*Dots and triplets can be added to any note durations, but this module only uses dotted quarter notes and eighth note triplets.

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

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

## On the Subject of Scripting

*As a scripter, I can say none of this makes sense.*

- On this module, a version of “Microsoft Visual Studio” can be found.
- The script has errors and needs to be fixed.
- Press the parts of the script that need to be changed.
- Running a faulty script will strike you.

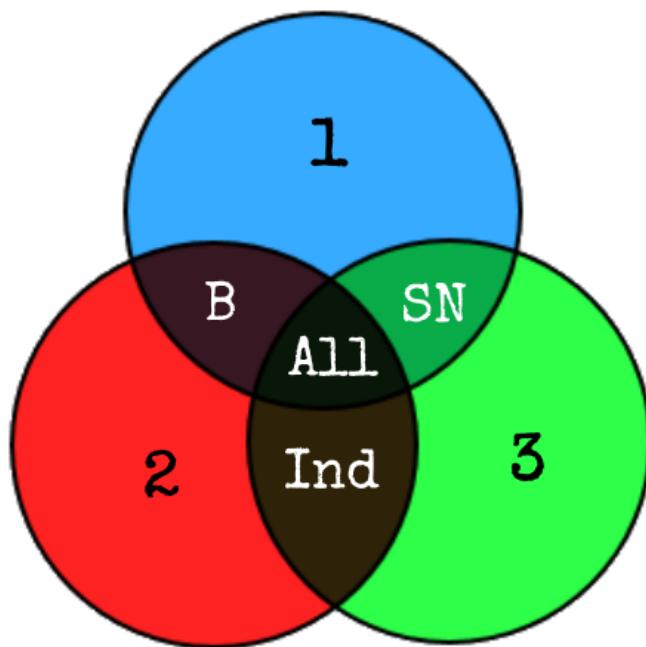
```

run script
X
1 using <program>
2 using <program>
3 using <program>
4 public class GameScript : MonoBehaviour
5 {
6     var Name;
7     public void MethodName()
8     {
9         Name = Value;
10        if (Condition)
11        {
12            Action();
13        }
14    }
15 }

```

### Section A: Using directives.

Find out what using directives are unnecessary. The number indicates the unnecessary using directive.



#### Rules:

- If multiple are correct, go to exceptions.
- None are unnecessary if none of the rules apply.
- Blue (Top) is true if the amount of lit indicators is greater than all unlit.
- Red (Bottom-left) is true if the indicator "SND", "TRN" or "CLR" is present.
- Green (Bottom-right) is true if the indicator "FRQ", "SIG" or "BOB" is lit.

#### Exceptions:

- If the exception doesn't apply, no Using directive is unnecessary
- B: Count the number of batteries. If even, both 1 and 2 are unnecessary.
- SN: If the Serial Number's last digit is 5 or higher, 3 is unnecessary.
- Ind: If the amount of indicators is more than the last Serial digit, 2 and 3 are unnecessary

## Section B: The variable.

Check both the variable type and name and cycle through all the different options (Int, Float, Bool and Char). Use **only the first option** you find in this list.

- The variable type is “int” when the Int value is lower than the last digit of the serial number.
- The variable type is “float” when the Float value is lower than the amount of batteries.
- The variable is “bool” when the condition (the if-statement) is true while the variable is bool.
- If none of the above apply, use char.

## Section C: The method type.

- If the amount of solved modules is even, then the type is “void”.
- Else the type is “bool”.

## Section D: The action.

Check the action and the using directives, and look up the pair in the final table.

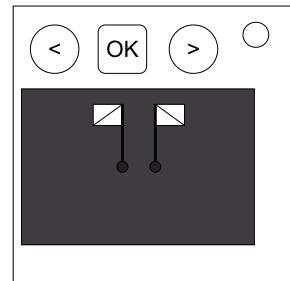
Using directives (Right)  Serial Number (Below)	Any using directive contains “KTaNE”	Else
Contains any letter in the word “KTaNE”	HandleSolve();	HandleStrike();
Else has a vowel	Solve();	Strike();
Else	OnSolve();	OnStrike();

## 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.*

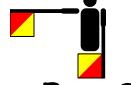
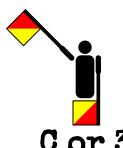
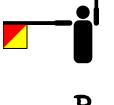
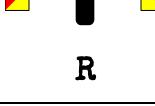
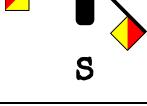
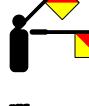
- A semaphore module will present with a previous button, a next button, an OK button and a semaphore indicator.
- Use the previous and next buttons to navigate through the semaphore sequence, starting from the left-most semaphore character to the right-most semaphore character.
- The semaphore sequence 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.

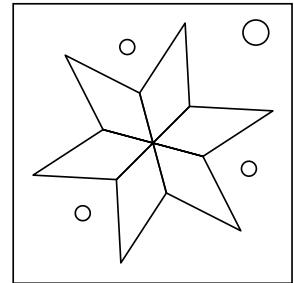
 Rest / Space	 Numerals	 Error / Attention	 A or 1	 B or 2
 C or 3	 D or 4	 E or 5	 F or 6	 G or 7
 H or 8	 I or 9	 J or Letters	 K or 0	 L
 M	 N	 O	 P	 Q
 R	 S	 T	 U	 V
 W	 X	 Y	 Z	 Cancel / Annul

(All images by [Denelson83](#), used under [CC-BY-SA-3.0](#), via [Wikimedia Commons](#))

## 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
<b>≥ 3 indicators</b>	Y	O	G	R	B	P
<b>≥ 3 ports</b>	P	Y	R	B	O	G
<b>≥ 3 digits in #</b>	O	G	B	P	R	Y
<b>≥ 3 letters in #</b>	G	B	O	Y	P	R
<b>≥ 3 batteries</b>	R	P	Y	O	G	B
<b>≥ 3 bat. holders</b>	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 Subways

*Why can't you find your own way...*

You are given a map, the name of a commuter, and the day the commuter is traveling. You must help them find their way by providing the route they need to take and the time they need to take it.

Bryan	Tu	<input type="radio"/>
		▲
		12
		▼
		▲
		PM
		▼
		Submit

1. Using the table below associated with the correct city, find out what time and route the commuter is taking. Routes and times are in the following format: **Route | Time**
2. Use the second table to find out the stops on the route. When selected, stops are marked: green = stop 1, yellow = stop 2, red = stop 3. Click a stop again to deselect it.

**Note:** If batteries are used to tell time, 0 = 12am, 5 = 5am, 14 = 2pm, etc. If the number of batteries exceeds 24, subtract 24 and use that new number.

Table(s) 1:

New York	Monday	Tuesday	Wednesday	Thursday	Friday
Bryan	1   8AM	8   7PM	4   4AM	3   11AM	6   12PM
John	6   7AM	1   2AM	2   1PM	7   Battery Count	3   4PM
Mike	7   Battery Count	2   3AM	5   6PM	8   9AM	4   Battery Count
Emily	8   8PM	2   1AM	1   2PM	3   Battery Count	5   11PM
Mary	7   6AM	1   Battery Count	4   3PM	6   5AM	2   5PM
Katie	5   12AM	7   10PM	3   Battery Count	8   10AM	4   9PM

<u>London</u>	Monday	Tuesday	Wednesday	Thursday	Friday
Bryan	9   1AM	14   <i>Battery Count</i>	13   5PM	10   5AM	15   6PM
John	13   <i>Battery Count</i>	11   12PM	10   2AM	16   4AM	14   9AM
Mike	9   8AM	16   7PM	12   <i>Battery Count</i>	11   9PM	15   11PM
Emily	13   11AM	9   4PM	10   3AM	16   1PM	12   <i>Battery Count</i>
Mary	13   7AM	16   2PM	11   12AM	9   <i>Battery Count</i>	12   10AM
Katie	12   <i>Battery Count</i>	14   8PM	9   6AM	13   3AM	16   10PM

<u>Paris</u>	Monday	Tuesday	Wednesday	Thursday	Friday
Bryan	17   <i>Battery Count</i>	18   9AM	21   8PM	22   2PM	19   7AM
John	20   3AM	19   10PM	23   <i>Battery Count</i>	18   10AM	22   12AM
Mike	20   5PM	21   <i>Battery Count</i>	23   11AM	18   8AM	24   4AM
Emily	17   12PM	22   1PM	24   9PM	18   6PM	20   <i>Battery Count</i>
Mary	19   5AM	21   3PM	23   6AM	24   <i>Battery Count</i>	17   11PM
Katie	19   2AM	17   <i>Battery Count</i>	20   7PM	21   1AM	23   4PM

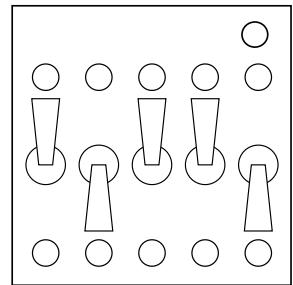
**Table 2:**

Route	Stops
1	Canal St 1 > Franklin St 1 > Chambers St 1-2-3
2	Franklin St 1 > Rector St 1 > South Ferry 1
3	Canal St J-N-Q-R > City Hall R-W > Rector St R-W
4	South Ferry R-W > Cortlandt St R-W > Canal St J-N-Q-R
5	Chambers St J-Z > Fulton St > Broad St J-Z
6	Wall St 2-3 > Park Place 2-3 > Chambers St 1-2-3
7	World Trade Center E > Canal St A-C-E > Chambers St A-C
8	Bowling Green 4-5 > Wall St 4-5 > City Hall 4-5-6
9	Green Park > Piccadilly Circus > Leicester Square
10	Holborn > Leicester Square > Green Park
11	Oxford Circus > Tottenham Court Road > Holborn
12	Warren Street > Tottenham Court Road > Leicester Square
13	Oxford Circus > Warren Street > King's Cross St. Pancras
14	Warren Street > Oxford Circus > Green Park
15	Holborn > Piccadilly Circus > Green Park
16	King's Cross St. Pancras > Warren Street > Green Park
17	Richelieu Drouot > Grands Boulevards > Bonne Nouvelle
18	Réaumur Sébastopol > Sentier > Bourse
19	St-Michel > Cité > Réaumur Sébastopol
20	Pont Neuf > Pont Marie > Sully Morland
21	Bonne Nouvelle > Grands Boulevards > Richelieu Drouot
22	Bourse > Sentier > Réaumur Sébastopol
23	Réaumur Sébastopol > Cité > St-Michel
24	Sully Morland > Pont Marie > Pont Neuf

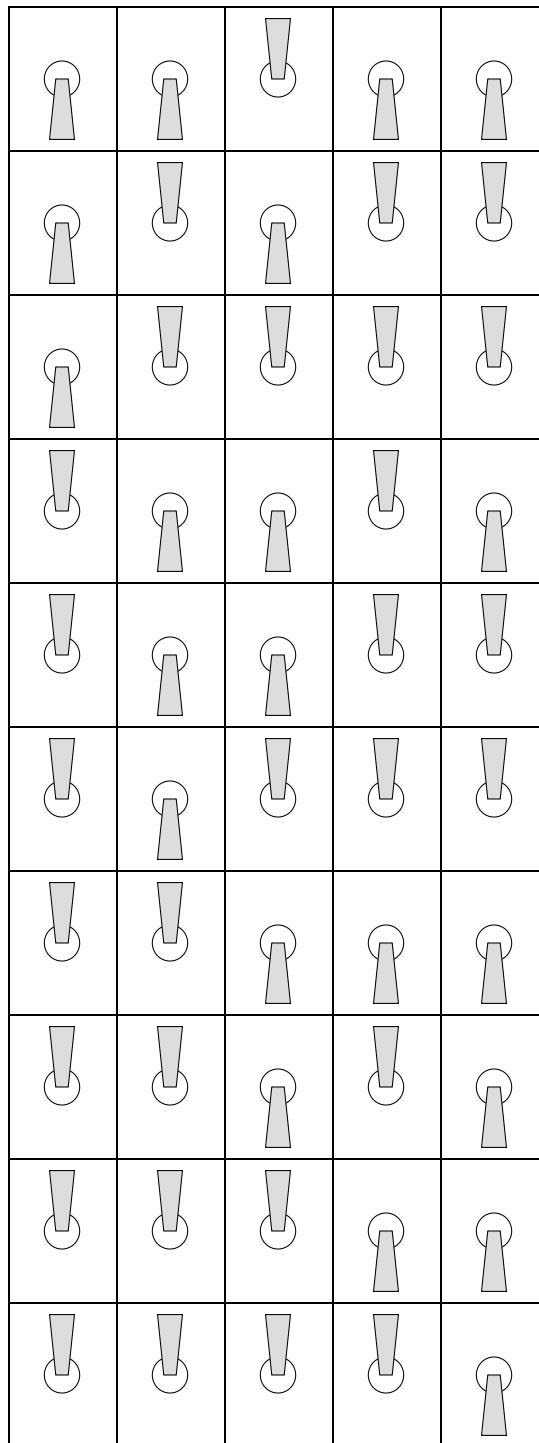
## On the Subject of Switches

*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 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:

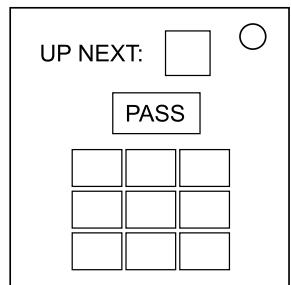
1. If the last digit of the serial number is even, the starting row is either 5, 6, 7, 8, or 9. Otherwise, the starting row is either 1, 2, 3, or 4.
2. If there is at least one parallel port, use the even values. Otherwise, use the odd values.
3. If there are more unlit indicators than lit indicators,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



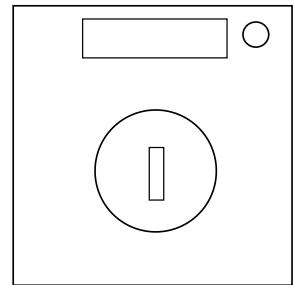
**Table 1**

	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

## On the Subject of Turn The Key

*How can something so simple be so infuriating?*

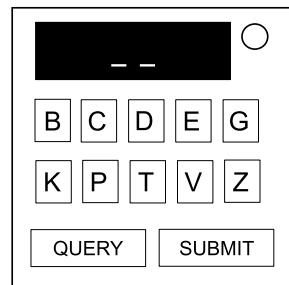
Turn the key when the bomb's timer matches the time on the display, no sooner, no later.



## On the Subject of 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".

## Appendix A: Indicator Identification Reference

Labelled indicator lights can be found on the sides of the bomb casing.



### Common Indicators

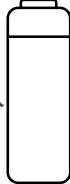
- SND
- CLR
- CAR
- IND
- FRQ
- SIG
- NSA
- MSA
- TRN
- BOB
- FRK

## Appendix A: Differentiation rules

$\frac{d}{dx}(c) = 0$	where $c$ is a constant
$\frac{d}{dx}(x^n) = nx^{n-1}$	where $n$ is any real number
$\frac{d}{dx}(\ln x) = \frac{1}{x}$	where $x > 0$
$\frac{d}{dx}(e^x) = e^x$	
$\frac{d}{dx}(\sin x) = \cos x$	
$\frac{d}{dx}[f(x) + g(x)] = f'(x) + g'(x)$	
$\frac{d}{dx}[f(x) - g(x)] = f'(x) - g'(x)$	
$\frac{d}{dx}[f(x)g(x)] = f(x)g'(x) + g(x)f'(x)$	
$\frac{d}{dx}f(g(x)) = f'(g(x))g'(x)$	

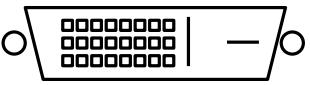
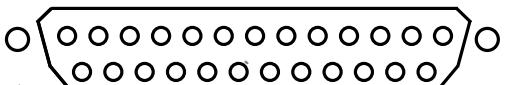
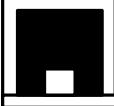
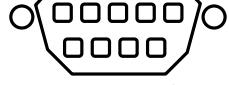
## Appendix B: Battery Identification Reference

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