BOMB DEFUSAL MANUAL

Version 1

Verification Code: 241

Revision 3

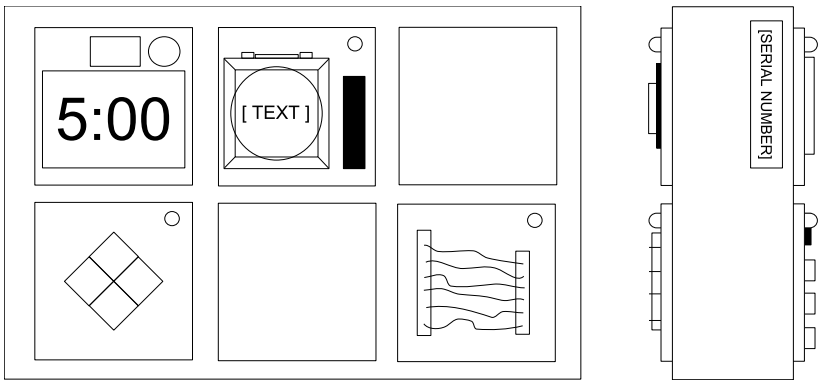
Welcome to the dangerous and challenging world of bomb defusing.

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



Front Side

Modules

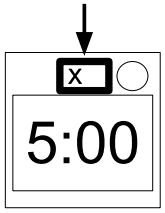
Each bomb will include up to 11 modules that must be disarmed. Each module is discrete and can be disarmed in any order.

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.

Strike Indicator

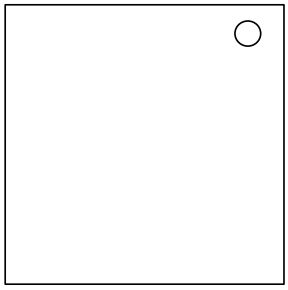


If no strike indicator is present above the countdown timer, the bomb will explode upon the first strike, leaving no room for error.

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.

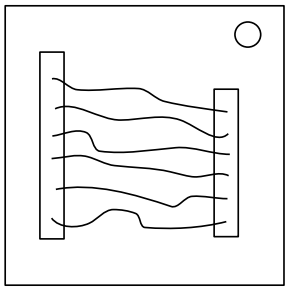
Section 1: Modules



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 <u>one</u> correct wire needs to be cut to disarm the module.
- Wire ordering begins with the first on the top.

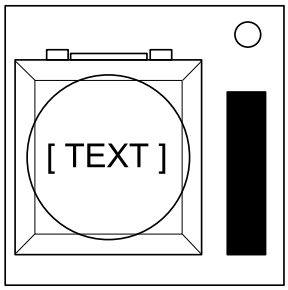
<u>3 wires:</u>
If there are no red wires, cut the second wire.
Otherwise, if the last wire is white, cut the last wire.
Otherwise, if there is more than one blue wire, cut the last blue wire.
Otherwise, cut the last wire.

<u>4 wires:</u>
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.

<u>5 wires:</u>
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.

<u>6 wires:</u>
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:

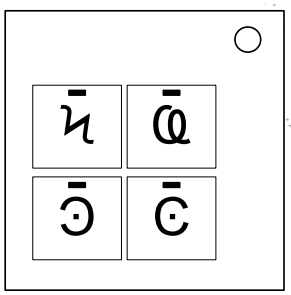
1. If the button is blue and the button says "Abort", hold the button and refer to "Releasing a Held Button".
2. If there is more than 1 battery on the bomb and the button says "Detonate", press and immediately release the button.
3. If the button is white and there is a lit indicator with label CAR, 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

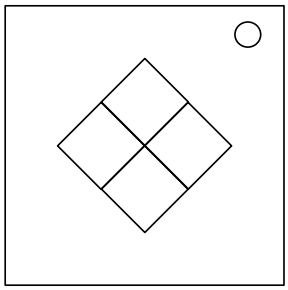


I'm not sure what these symbols are, but I suspect they have something to do with occult.

- 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.

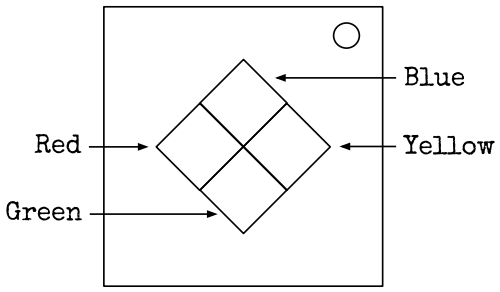
Ϙ	Ӭ	©	Б	Ψ	Б
Ѧ	Ϙ	☪	¶	ҿ	Ӭ
ϗ	Ↄ	Ҩ	Ђ	Ђ	✖
Ҷ	Ҩ	Ж	Ӂ	Ͼ	æ
Ӂ	☆	Ҙ	Ж	¶	Ψ
Ӌ	Ӌ	ϗ	¿	Ӟ	Ӣ
Ↄ	¿	☆	ҿ	★	Ω

On the Subject of Simon Says



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

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



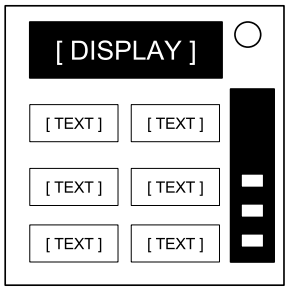
If the serial number contains a vowel:

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

If the serial number does <u>not</u> 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

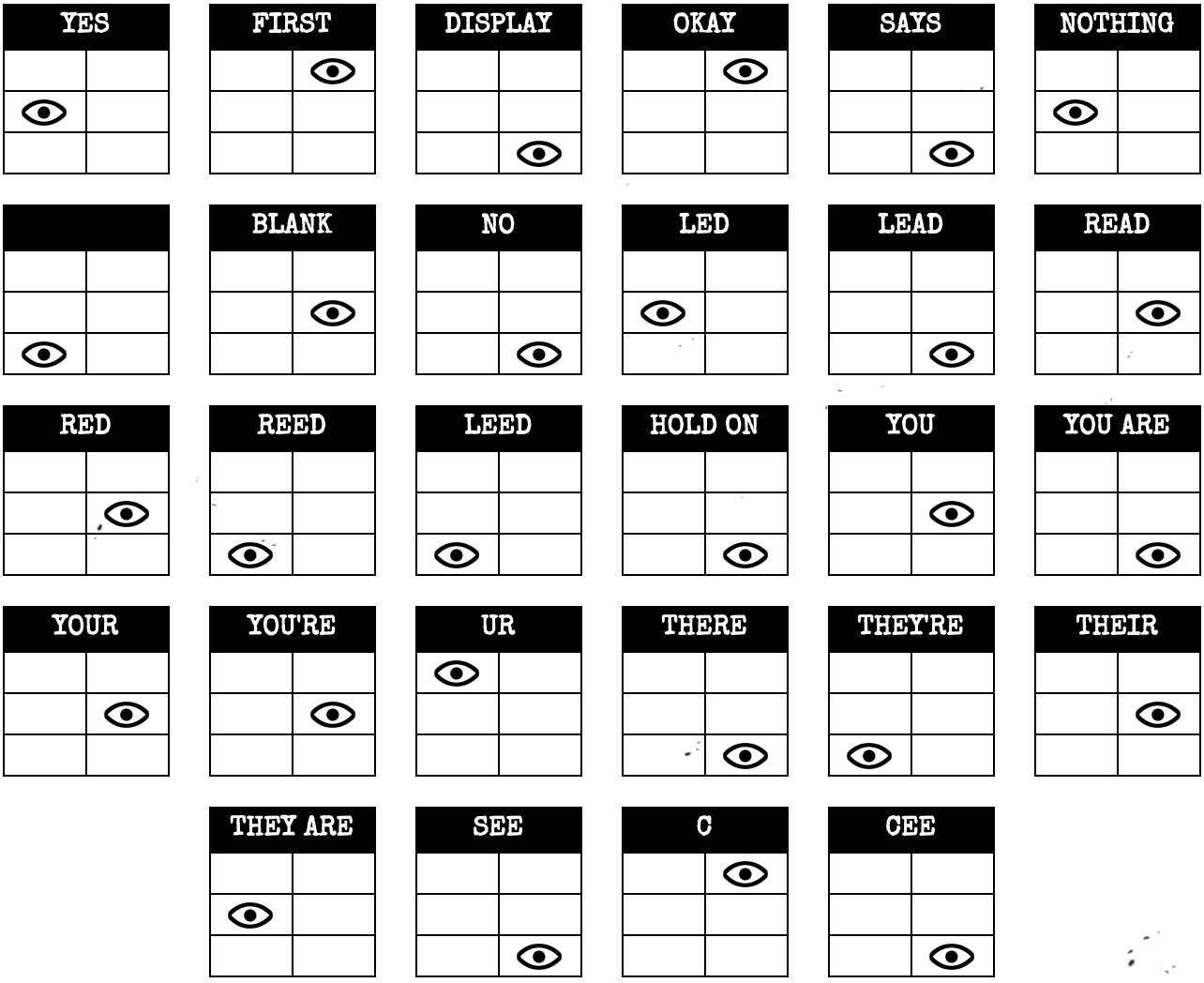


This contraption is like something out of a sketch comedy routine, which might be funny if it wasn't connected to a bomb. I'll keep this brief, as words only complicate matters.

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:

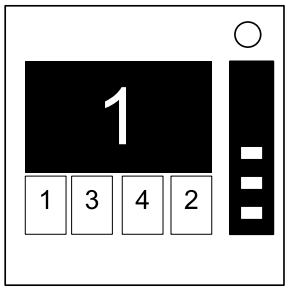


Step 2:

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

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

On the Subject of Memory



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

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

Stage 1:

If the display is 1, press the button in the second position.
If the display is 2, press the button in the second position.
If the display is 3, press the button in the third position.
If the display is 4, press the button in the fourth position.

Stage 2:

If the display is 1, press the button labeled "4".
If the display is 2, press the button in the same position as you pressed in stage 1.
If the display is 3, press the button in the first position.
If the display is 4, press the button in the same position as you pressed in stage 1.

Stage 3:

If the display is 1, press the button with the same label you pressed in stage 2.
If the display is 2, press the button with the same label you pressed in stage 1.
If the display is 3, press the button in the third position.
If the display is 4, press the button labeled "4".

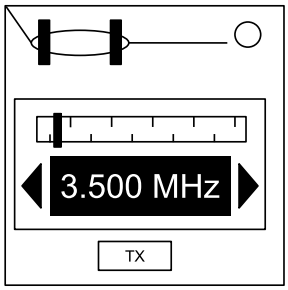
Stage 4:

If the display is 1, press the button in the same position as you pressed in stage 1.
If the display is 2, press the button in the first position.
If the display is 3, press the button in the same position as you pressed in stage 2.
If the display is 4, press the button in the same position as you pressed in stage 2.

Stage 5:

If the display is 1, press the button with the same label you pressed in stage 1.
If the display is 2, press the button with the same label you pressed in stage 2.
If the display is 3, press the button with the same label you pressed in stage 4.
If the display is 4, press the button with the same label you pressed in stage 3.

On the Subject of Morse Code



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

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

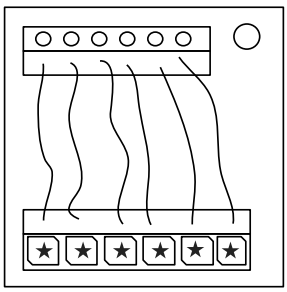
How to Interpret

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

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

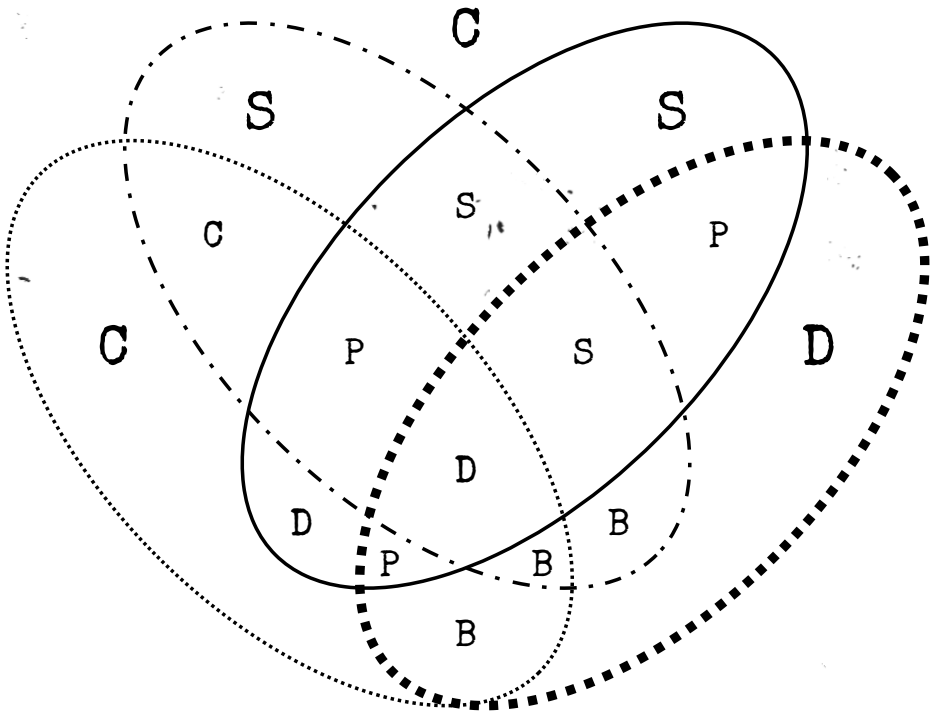
If the word is:	Respond at frequency:	
shell	3.505 MHz	SH
halls	3.515 MHz	H
slick	3.522 MHz	SL
trick	3.532 MHz	T
boxes	3.535 MHz	BOX
leaks	3.542 MHz	L
strobe	3.545 MHz	STR
bistro	3.552 MHz	BIS
flick	3.555 MHz	FL
bombs	3.565 MHz	BOM
break	3.572 MHz	BRE
brick	3.575 MHz	BRI
steak	3.582 MHz	STE
sting	3.592 MHz	STI
vector	3.595 MHz	V
beats	3.600 MHz	BE

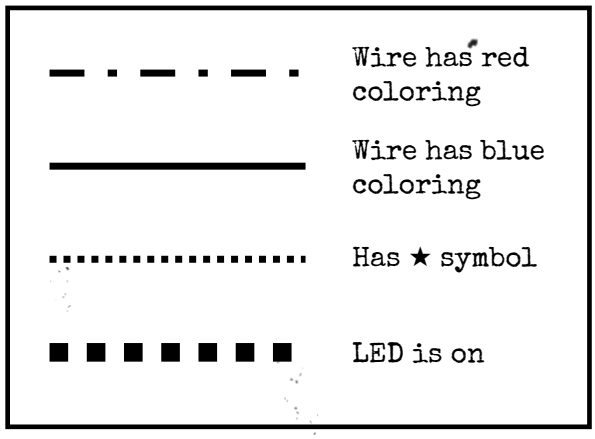
On the Subject of Complicated Wires



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.

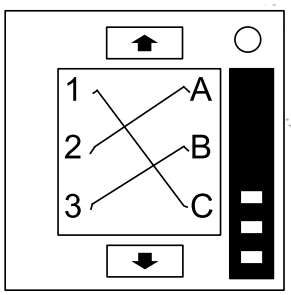




Letter	Instruction
C	Cut the wire
D	Do not cut the wire
S	Cut the wire if the last digit of the serial number is even
P	Cut the wire if the bomb has a parallel port
B	Cut the wire if the bomb has two or more batteries

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.

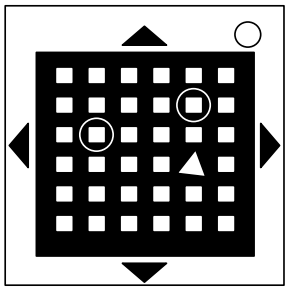
- Within this module there are several panels with wires on them, but only one panel is visible at a time. Switch to the next panel by using the down button and the previous panel by using the up button.
- Do not switch to the next panel until you are sure that you have cut all necessary wires on the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

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

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

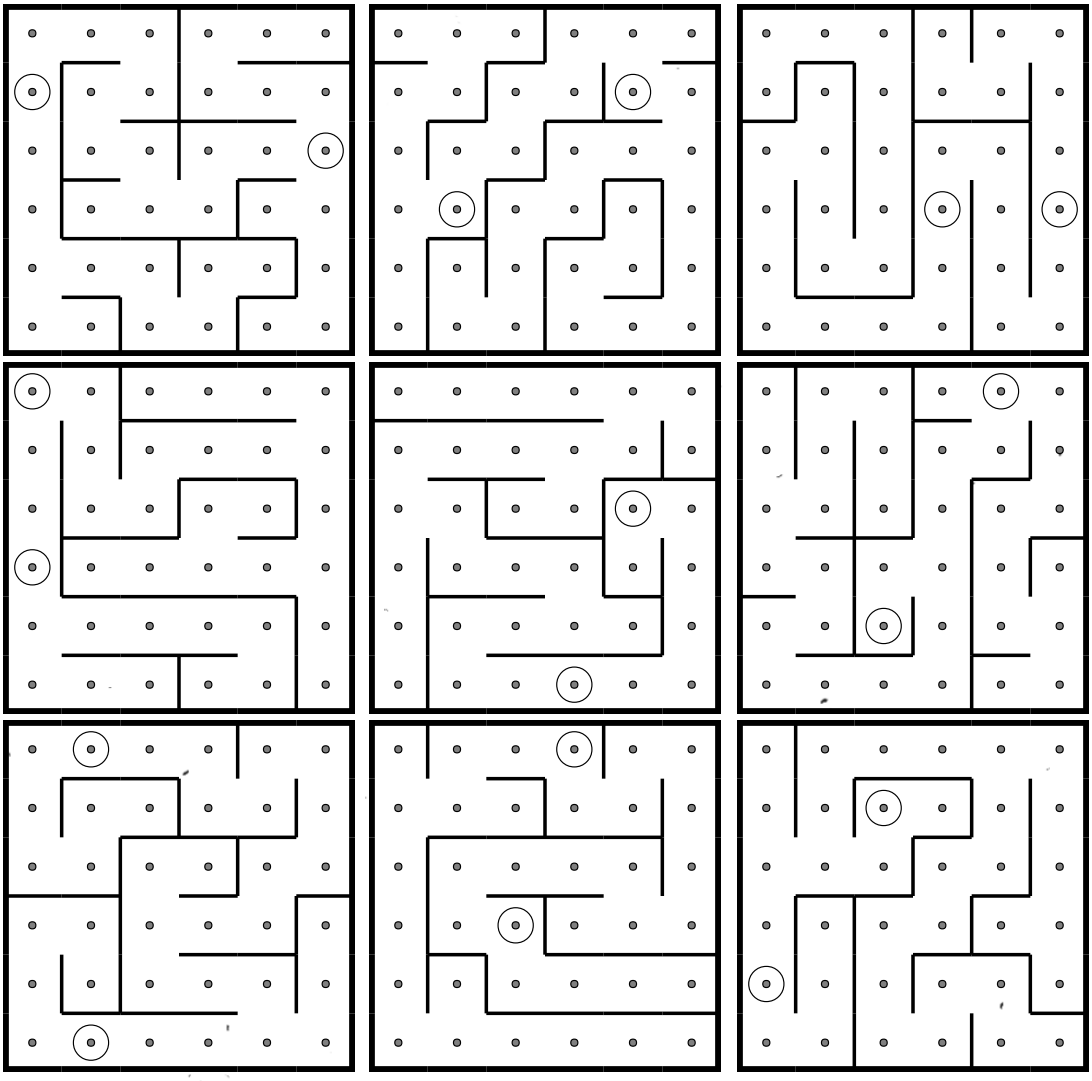
Black Wire Occurrences	
Wire Occurrence	**Cut if connected to:**
First black occurrence	A, B or C
Second black occurrence	A or C
Third black occurrence	B
Fourth black occurrence	A or C
Fifth black occurrence	B
Sixth black occurrence	B or C
Seventh black occurrence	A or B
Eighth black occurrence	C
Ninth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

On the Subject of Mazes

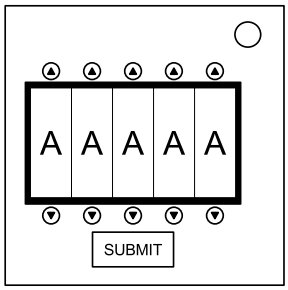


This seems to be some kind of maze, probably stolen off of a restaurant placemat.

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



On the Subject of Passwords

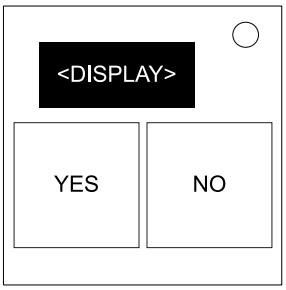


Fortunately this password doesn't seem to meet standard government security requirements: 22 characters, mixed case, numbers in random order without any palindromes above length 3.

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

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

On the Subject of Flashing Colors



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

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

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

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

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

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

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

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

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

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

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

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

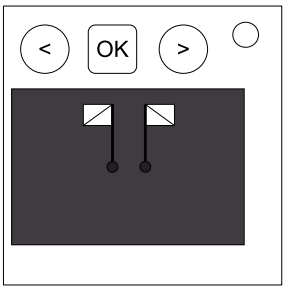
If Magenta is used as the word as least three times in the sequence, press No on the first time Yellow is used as either the word or the color of the word in the sequence.

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

Continuation of previous table...

The color of the last word in the sequence is Blue: If the color of the word does not match the word itself three times or more in the sequence, press Yes on the first time in the sequence where the color of the word does not match the word itself. If the word Red is shown in Yellow color, or the word Yellow is shown in White color, press No when the word White is shown in Red color. Otherwise, press Yes the last time Green is either the word or the color of the word in the sequence.
The color of the last word in the sequence is Magenta: If a color occurs consecutively with different words, press Yes on the third entry in the sequence. If the number of times the word Yellow appears is greater than the number of times that the color of the word is Blue, press No the last time the word Yellow is in the sequence. Otherwise, press No on the first time in the sequence where the color of the word matches the word of the seventh entry in the sequence.
The color of the last word in the sequence is White: If the color of the third word matches the word of the fourth word or fifth word, press No the first time that Blue is used as the word or the color of the word in the sequence. If the word Yellow is shown in Red color, press Yes on the last time Blue is used as the color of the word. Otherwise, press No.

On the Subject of Semaphore



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

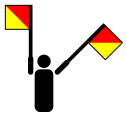
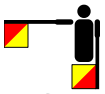
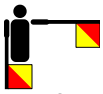
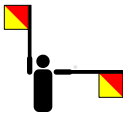
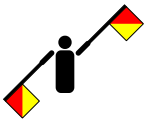
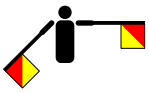
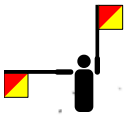
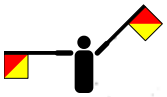
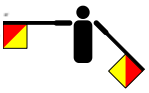
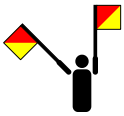
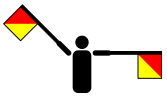
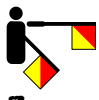
See the next page for semaphore reference.

- 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.

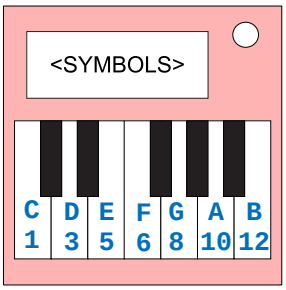
Semaphore Reference

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

On the Subject of Cruel Piano Keys



The devil's interval approaches...

See Appendix A for indicator identification reference.
See Appendix B for battery identification reference.
See Appendix C for port identification reference.
See the third page for serialism & music terminology reference.

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

Table 1.

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

0: F G♯ E D A♯ B C A D♯ F♯ G C♯

1: A♯ B G♯ E G F♯ F C♯ A D C D♯

2: F♯ C♯ D♯ E A♯ C F B G A G♯ D

3: E F F♯ D D♯ A♯ C G G♯ A C♯ B

4: D C G F♯ E F D♯ G♯ B A♯ C♯ A

5: C A F♯ A♯ G B C♯ D♯ F D G♯ E

6: G♯ E F♯ D♯ C A F C♯ G D B A♯

7: E B G A C♯ C A♯ F D D♯ G♯ F♯

8: G♯ C♯ D C F♯ D♯ A♯ A B G E F

9: D♯ A♯ F♯ G E F C G♯ C♯ B A D

Table 2.

Required Symbol(s)	**Further Requirements**	**Lookup Index**	**Transformation**
and	2 or more indiciators (lit or unlit)	Left-most digit in serial number	**RI**
or	An empty port plate	Number of battery holders	**P**, transpose down by 'x' semitones, where 'x' = number of minutes remaining
or	2 or more of a certain type of port	Least significant digit of number of completed modules	**I**
and	2 or more port plates	9 minus the number of unlit indicators	**R**
or	Serial contains 1 or more vowels	Least significant digit of number of strikes	**R**, transpose down by 3 semitones
or	Even number of batteries	DVI-D present: 7 Otherwise: 3	**P**, transpose up by 'x' semitones, where 'x' = number of ports*
or	An indicator with no vowels in the label	8	**I**
or	Less than 2 ports	4	**R**
or	*(No other requirements)*	5	**P**
If none of these rules apply, revert back to the Normal Piano Keys ruleset and play the given note sequence normally.			

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

Serialism & Music Terminology

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

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

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

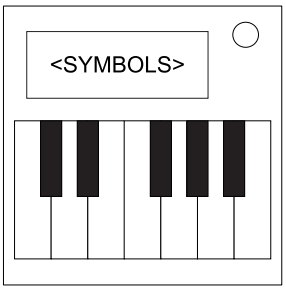
The Inverse sequence (or '**I**' for short), takes the Prime sequence, but the intervals between the notes are inverted. For example, take the interval from A to B; the interval is +2 semitones, as it takes you 2 semitones to get from A to B (A goes to A♯ then B). The inversion of this interval would be -2 semitones. Therefore, the inverted sequence would be A then G, as G is -2 semitones away from A (A goes to G♯ then G).
As an extended example, the Inversion of the Prime row A B C D E would be A G F♯ E D; the first note always remains the same, and all the other notes get inverted relative to that note.

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

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

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

On the Subject of Piano Keys



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

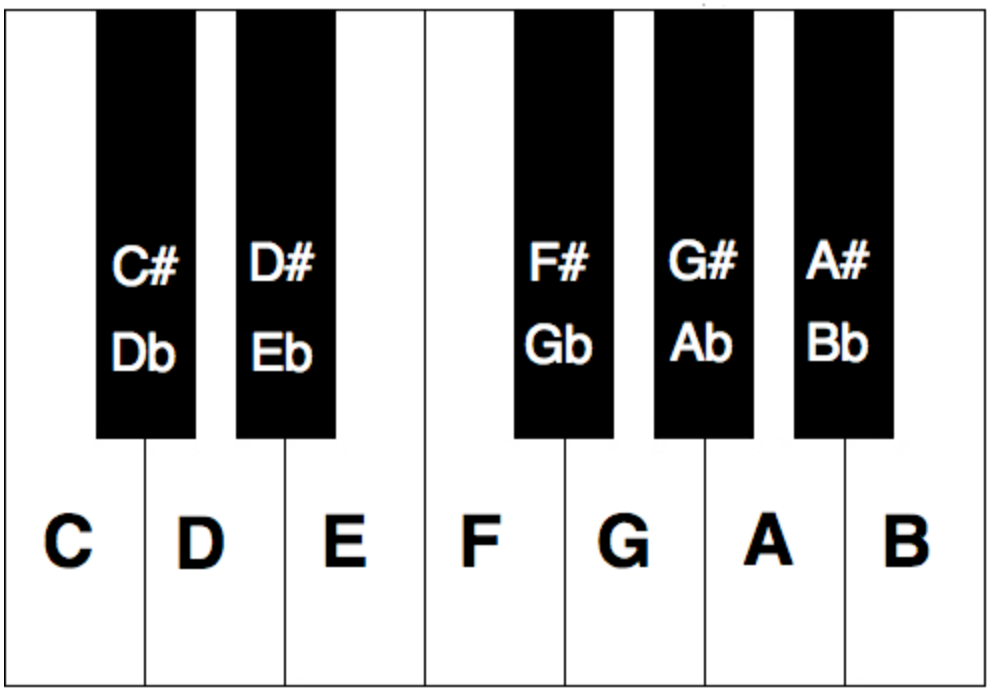
See Appendix A for indicator identification reference.
See Appendix B for battery identification reference.
See Appendix C for port identification reference.
See the next page for piano/keyboard reference.

- 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.

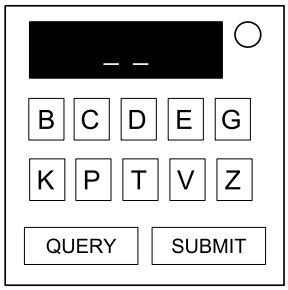
Required Symbol(s)	Further Requirements	Note Sequence	
♭	Last digit of serial number is even	B♭ B♭ B♭ B♭ G♭ A♭ B♭ A♭ B♭	Final Fantasy
𝄡 or ♯	2 or more battery holders	E♭ E♭ D D E♭ E♭ D E♭ E♭ D D E♭	Guiles Theme
♮ **and** 𝄐	*(No other requirements)*	E F♯ F♯ F♯ F♯ E E E	James Bond
¢ or ≈	RCA port is present	B♭ A B♭ F E♭ B♭ A B♭ F E♭	Jurassic
𝄢	SND indicator is present and lit	E E E C E G G	Super Mario
𝄻 or 𝄐 or 𝄡	3 or more batteries	C♯ D E F C♯ D E F B♭ A	Pink Panther
♭ **and** ♯	*(No other requirements)*	G G C G G C G C	Superman
¢ or 𝄻	Serial number contains a 3, 7 or 8	A E F G F E D D F A	Tetris Theme A
♮ or ≈ or 𝄢	*(No other requirements)*	G G G E♭ B♭ G E♭ B♭ G	Empire Strikes Back
(No requirement)	*(No other requirements)*	B D A G A B D A	Fairy Theme

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 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.

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

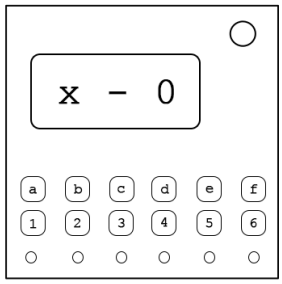
A- 1
B- 2
C- 3
D- 4
E- 5
F- 6
G- 7
H- 8
I- 9
J-10
K-11
L-12
M-13
N-14
O-15
P-16
Q-17
R-18
S-19
T-20
U-21
V-22
W-23
X-24
Y-25
Z-26

Step 3: Repeat and Submit

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

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

On the Subject of Chess



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

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

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

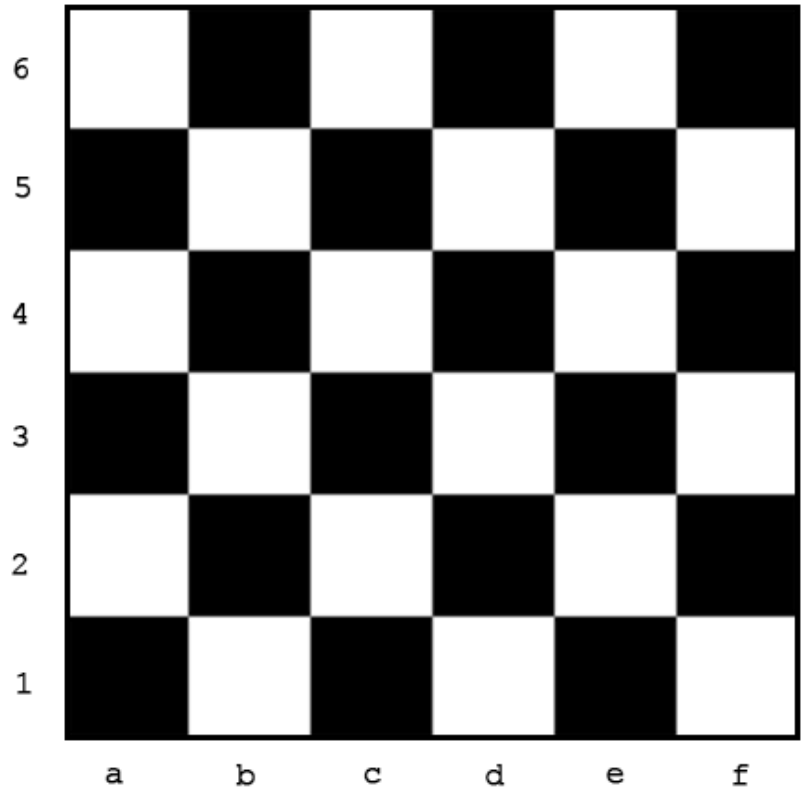
- There are six unique coordinates that represent six positions on the chessboard.
- Use the numbered keys in the bottom row to browse through the different coordinates. A green LED below the button will indicate the position of the currently selected coordinate.
- Using the reference table below, each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

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

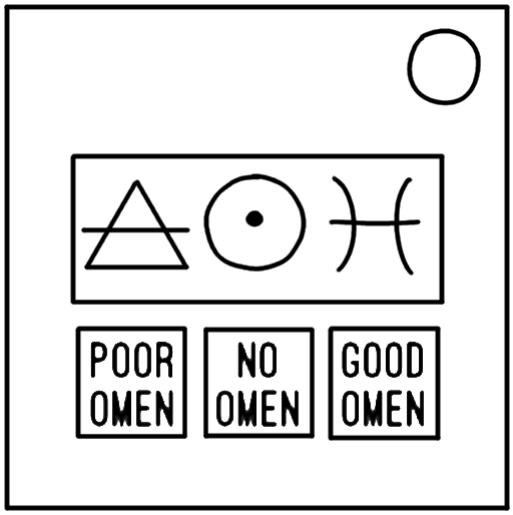
Position #1: Monarchy vs Theocracy Occupied by a king if Position #5 is occupied by a queen. Otherwise, the field is occupied by a bishop.
Position #2: Commander of the Army Occupied by a rook if the last digit of the serial number is odd. Otherwise, the field is occupied by a knight.
Position #3: A Matter of Regents Occupied by a queen if there are less than two rooks on the board. Otherwise, the field is occupied by a king.
Position #4: The Iron Tower Always occupied by a rook. *"Neither of two evils must thy strike claim; Instead smite the darkness between the same."*
Position #5: Conflict between Good and Evil Occupied by a queen if the field is white. Otherwise, the field is occupied by a rook.
Position #6: The Scepter, the Sword and the Crosier 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.

Chess Board Reference

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



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.

	☉	☽	☿	♀	♂	♃	♄	♅	♆	♇
△	0	0	1	-1	0	1	-2	2	0	-1
▽	-2	0	-1	0	2	0	-2	2	0	1
⨺	-1	-1	0	-1	1	2	0	2	1	-2
⨻	-1	2	-1	0	-2	-1	0	2	-2	2

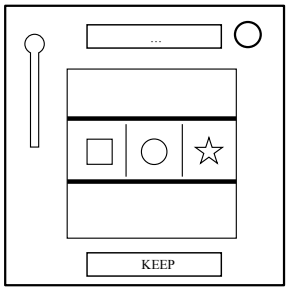
	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
	1	0	-1	0	0	2	2	0	1	0	1	0
	2	2	-1	2	-1	-1	-2	1	2	0	0	2
	-2	-1	0	0	1	0	1	2	-1	-2	1	1
	1	1	-2	-2	2	0	-1	1	0	0	-1	-1

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

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

Symbol	Zodiac	Symbol	Zodiac	Symbol	Zodiac
	Aries		Leo		Sagittarius
	Taurus		Virgo		Capricorn
	Gemini		Libra		Aquarius
	Cancer		Scorpio		Pisces

On the Subject of Silly Slots



Sassy sally said sorry since soggy Steven slurped soup.

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

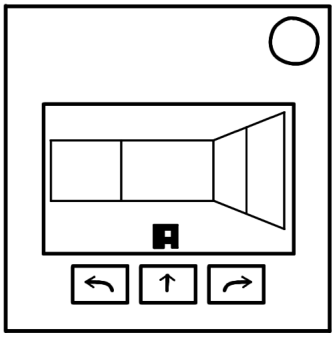
The slots are in an ILLEGAL state if any of these statements are true:

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

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

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

On the Subject of 3D Maze



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

- V2: Direction instructions have changed.
- The defuser starts in a random position and orientation in one of the ten mazes below.
- Locate the defuser using a 3D view of the maze walls, which also shows the symbol on the floor of the current space, and if there is a symbol in the space ahead.
- The maze map is cyclic; moving off one of the edges will take the defuser to the space on the opposite side, provided there is no wall in between the space.
- One of the walls is the goal, the rest will cause strikes if moved into.
- To defuse the module, locate the goal wall, and move through it from either side.
- Using the methods below, calculate a row (0-7, left to right), a column (0-7, top to bottom), and a direction; the goal wall will be the first wall from these coordinates in the given direction.

Row:

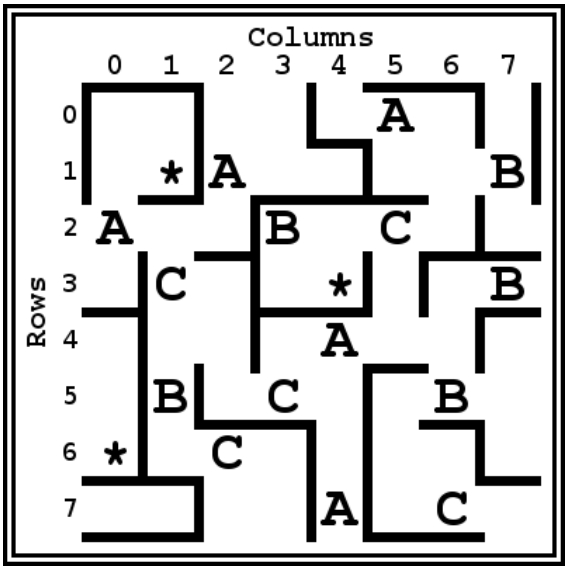
- Start with the first numeric digit in the serial number.
- Add 1 for every unlit indicator with a letter in "**MAZE GAMER**".
- If the row number is greater than 7, subtract 8.

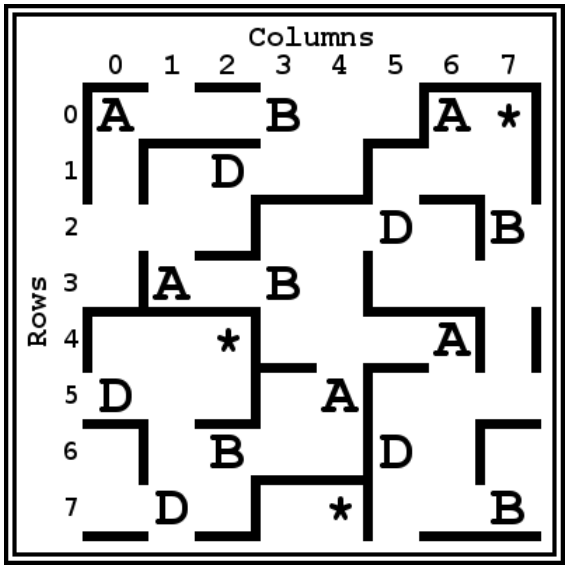
Column:

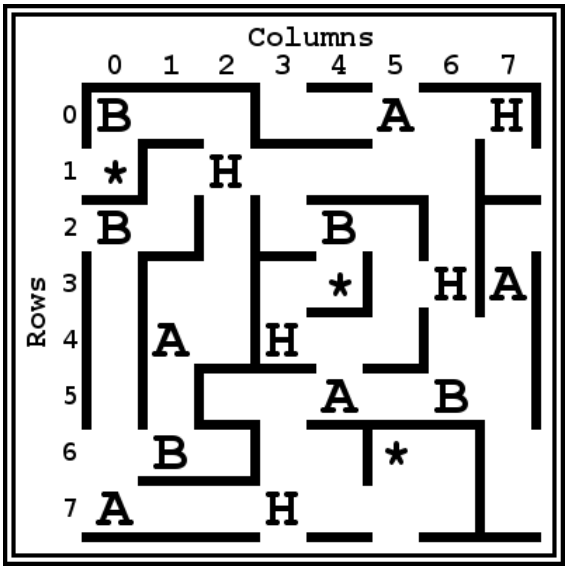
- Start with the last numeric digit in the serial number.
- Add 1 for every lit indicator with a letter in "**HELP IM LOST**".
- If the column number is greater than 7, subtract 8.

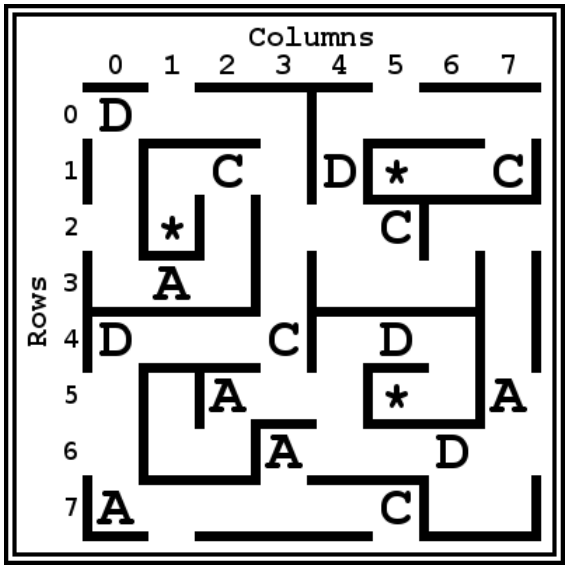
Direction:

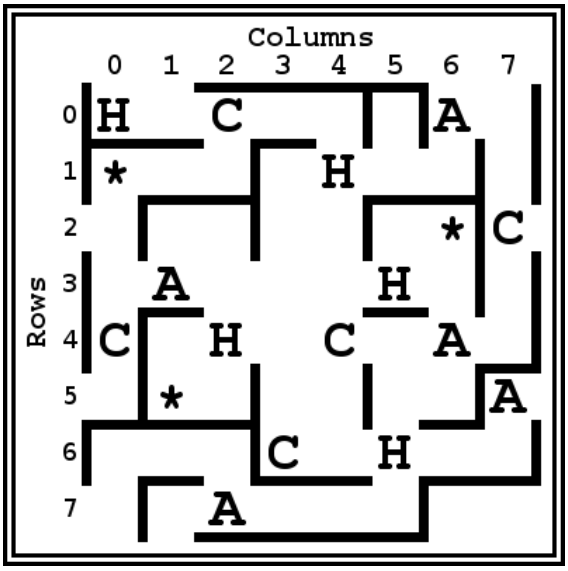
- Each maze contains three star icons marked on the map.
- On the floor in each of these locations is a letter, which maps to the direction to the goal wall: "N" becomes North, "S" becomes South, "E" becomes East, and "W" becomes West.
- Beware of letters not in these marked locations, they carry incorrect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

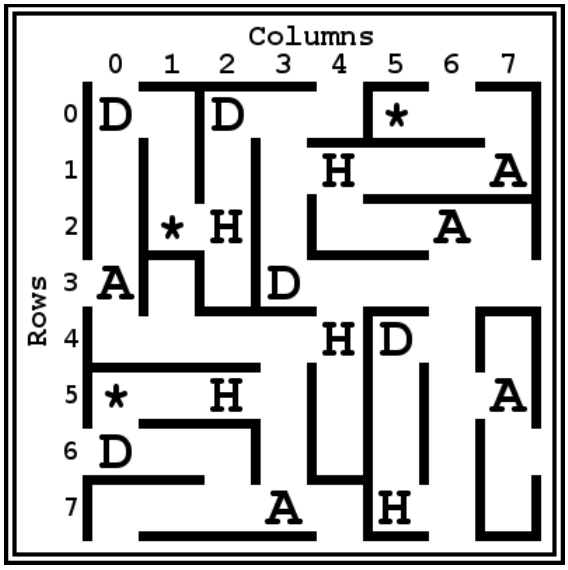

Columns
0 1 2 3 4 5 6 7
Rows
0 A
1 * A B
2 A B C
3 C * B
4 A
5 B C B
6 * C
7 A C

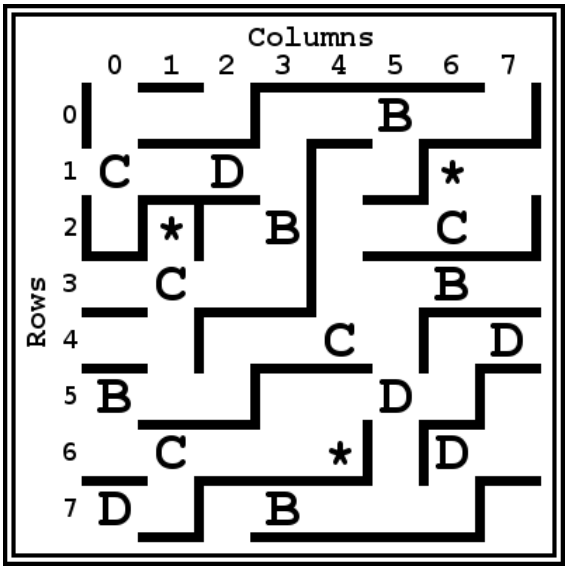

Columns
0 1 2 3 4 5 6 7
Rows
0 A B A *
1 D
2 D B
3 A B
4 * A
5 D A
6 B D
7 D * B

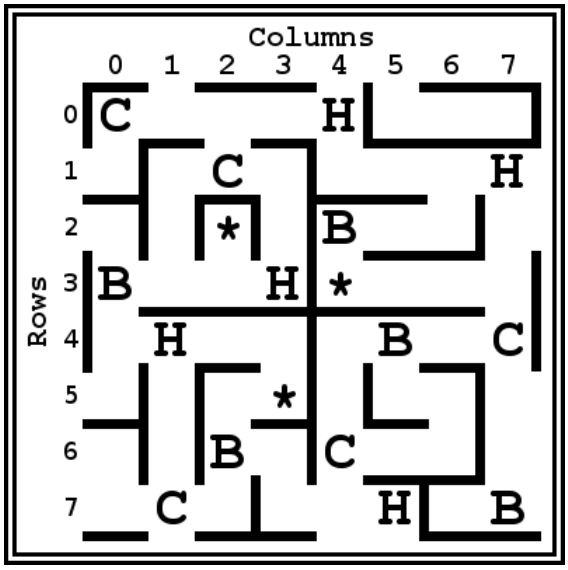

Columns
0 1 2 3 4 5 6 7
Rows
0 B A H
1 * H
2 B B
3 * H A
4 A H
5 A B
6 B *
7 A H

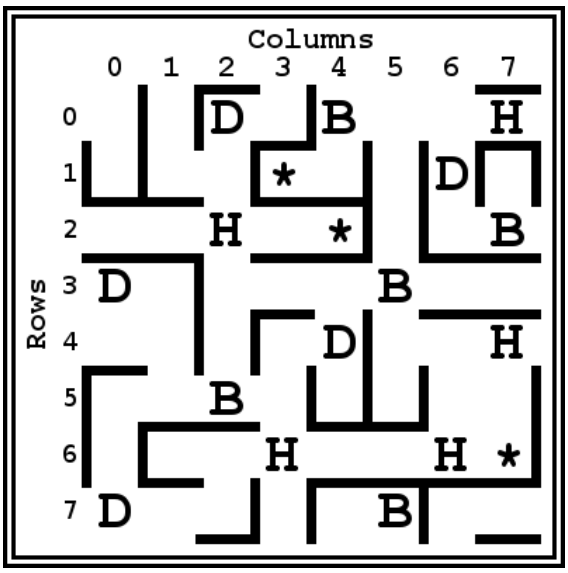

Columns
0 1 2 3 4 5 6 7
Rows
0 D
1 C D * C
2 * C
3 A
4 D C D
5 A * A
6 A D
7 A C

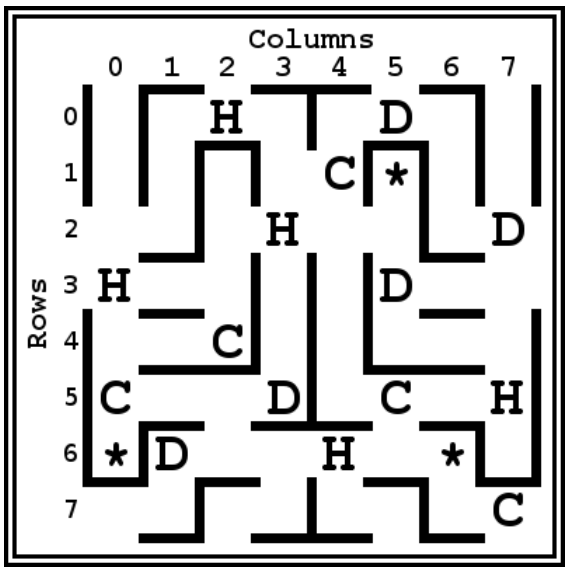

Columns
0 1 2 3 4 5 6 7
Rows
0 H C A
1 * H
2 * C
3 A H
4 C H C A
5 * A
6 C H
7 A


Columns
0 1 2 3 4 5 6 7
Rows
0 D D *
1 H A
2 * H A
3 A D
4 H D
5 * H A
6 D
7 A H

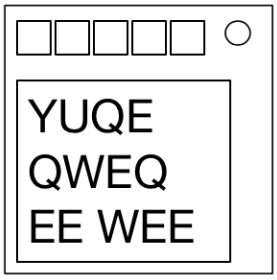

Columns
0 1 2 3 4 5 6 7
Rows
0 B
1 C D *
2 * B C
3 C B
4 C D
5 B D
6 C * D
7 D B


Columns
0 1 2 3 4 5 6 7
Rows
0 C H
1 C H
2 * B
3 B H *
4 H B C
5 *
6 B C
7 C H B


Columns
0 1 2 3 4 5 6 7
Rows
0 D B H
1 * D
2 H * B
3 D B
4 D H
5 B
6 H H *
7 D B


Columns
0 1 2 3 4 5 6 7
Rows
0 H D
1 C *
2 H D
3 H D
4 C
5 C D C H
6 * D H *
7 C

On the Subject of Cryptography



WLMY ETGXFD EQCD ED PQKW WT CMFF EZYDFB.

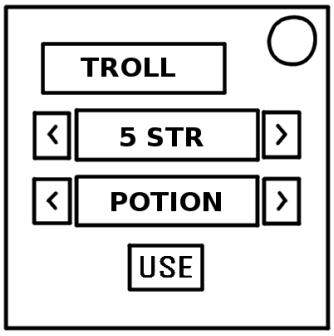
SEE APPENDIX CD43 FOR AN EXCERPT OF "A CHRISTMAS CAROL".
SEE APPENDIX CD44 FOR FREQUENT LETTERS AND WORDS.

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

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

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

On the Subject of 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 is is displayed in the inventory.
- Use the item table below to determine whether or not to use each item.
- Items can be used in any order, but all applicable items must be used before a weapon is used to fight the enemy.
- Use the weapon table and the enemy statistic table to determine which weapon to use to fight the enemy.
- For each weapon, compare the player's relevant stat (STR, DEX, or INT), plus any bonus, to the enemy's same stat.
- To defeat the enemy most efficiently, use the weapon which has the highest stat advantage (or lowest disadvantage).
- If two weapons have the same stat advantage, either can be used.

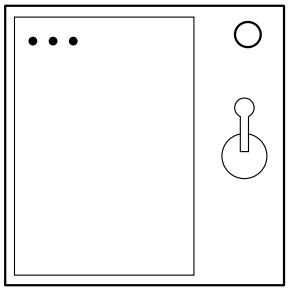
Statistic	**Description**
5 STR	Strength (STR) of player, used in combat
5 DEX	Dexterity (DEX) of player, used in combat
5 INT	Intelligence (INT) of player, used in combat
5' 5"	Height of player, in feet and inches
15°C	Temperature, in degrees Celsius
9.8 m/s^2	Force of gravity, in meters per second squared
101 kPa	Atmospheric pressure, in kilo pascals

Item	Use if...
Balloon	Gravity is less than 9.3 m/s² or pressure is greater than 110 kPa, and not fighting an Eagle.
Battery	There is at most 1 battery on the bomb, and fighting an enemy other than a Golem or a Wizard.
Bellows	If fighting a Dragon or an Eagle, use if pressure is greater than 105 kPa. If fighting a different enemy, use if pressure is less than 95 kPa.
Cheat code	Cheaters never prosper! Don't use these.
Crystal ball	INT is greater than the last digit of the serial number, and not fighting a Wizard.
Feather	DEX is greater than either STR or INT.
Hard drive	There are two or more of the same port on the bomb.
Lamp	Temperature is less than 12°C, and not fighting a Lizard.
Moonstone	There are at least two unlit indicators on the bomb.
Potion	Always use, but note that STR, DEX, and INT may change.
Small dog	Fighting an enemy other than a Demon, a Dragon, or a Troll.
Stepladder	The player is shorter than 4', and fighting an enemy other than a Goblin or a Lizard.
Sunstone	There are at least two lit indicators on the bomb.
Symbol	Fighting a Demon or a Golem, or if the temperature is greater than 31°C.
Ticket	The player is 4' 6" or taller, and gravity is at least 9.2 m/s², and at most 10.4 m/s².
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 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
← ← → ← → →	5/4
1 3 2 4	3/2
LEFT ARROW LEFT WORD RIGHT ARROW LEFT WORD RIGHT ARROW RIGHT WORD	5/8
BLANK	1/3
LITERALLY BLANK	1/5
FOR THE LOVE OF ALL THAT IS GOOD AND HOLY PLEASE FULLSTOP FULLSTOP.	9/0
AN ACTUAL LEFT ARROW LITERAL PHRASE	5/3
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
ALL WORDS ONE THREE TO FOR FOR AS IN THIS IS FOR YOU	4/0
LITERALLY NOTHING	1/4
NO, LITERALLY NOTHING	2/5
THE WORD LEFT	7/0
HOLD ON IT'S BLANK	1/9
SEVEN WORDS FIVE WORDS THREE WORDS THE PUNCTUATION FULLSTOP	0/5
THE PHRASE THE WORD STOP TWICE	9/1
THE FOLLOWING SENTENCE THE WORD NOTHING	2/7
ONE THREE TO FOR	3/9
THREE WORDS THE WORD STOP	7/3
DISREGARD WHAT I JUST SAID. FOUR WORDS, NO PUNCTUATION. ONE THREE 2 4.	3/1
1 3 2 FOR	1/0
DISREGARD WHAT I JUST SAID. TWO WORDS THEN TWO DIGITS. ONE THREE 2 4.	0/8
WE JUST BLEW UP	4/2

Display	Action
NO REALLY.	5/2
← LEFT → LEFT → RIGHT	5/6
ONE AND THEN 3 TO 4	4/7
STOP TWICE	7/6
LEFT	6/9
..	8/5
PERIOD PERIOD	8/2
THERE ARE THREE WORDS NO PUNCTUATION READY? STOP DOT PERIOD	5/0
NOVEBMER OSCAR SPACE, LIMA INDIGO TANGO ECHO ROMEO ALPHA LIMA LIMA YANKEE SPACE NOVEMBER OSCAR TANGO HOTEL INDEGO NOVEMBER GOLF	2/9
FIVE WORDS THREE WORDS THE PUNCTUATION FULLSTOP	1/9
THE PHRASE: THE PUNCTUATION FULLSTOP	9/3
EMPTY SPACE	1/6
ONE THREE TWO FOUR	3/7
IT'S SHOWING NOTHING	2/3
LIMA ECHO FOXTROT TANGO SPACE ALPHA ROMEO ROMEO OSCAR RISKY SPACE SIERRA YANKEE MIKE BRAVO OSCAR LIMA	1/2
ONE 3 2 4	3/4
STOP.	7/4
.PERIOD	8/1
NO REALLY STOP	5/1
1 3 TOO 4	2/0
PERIOD TWICE	8/3

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

Display	Action
THIS ONE IS ALL ARROW SYMBOLS NO WORDS	2/8
←	6/3
THE WORD STOP TWICE	9/4
← ← RIGHT LEFT → →	6/1
THE PUNCTUATION FULLSTOP	9/2
1 3 TOO WITH TWO OS 4	4/1
THREE WORDS THE PUNCTUATION FULLSTOP	9/9
OK WORD FOR WORD LEFT ARROW SYMBOL TWICE THEN THE WORDS RIGHT LEFT RIGHT THEN A RIGHT ARROW SYMBOL	6/0
DOT DOT	8/6
LEFT ARROW	6/8
AFTER I SAY BEEP FIND THIS PHRASE WORD FOR WORD BEEP AN ACTUAL LEFT ARROW	7/2
ONE THREE 2 WITH TWO OHS 4	4/3
LEFT ARROW SYMBOL	6/4
AN ACTUAL LEFT ARROW	6/2
THAT'S WHAT IT'S SHOWING	2/1
THE PHRASE THE WORD NOTHING	2/6
THE WORD ONE AND THEN THE NUMBERS 3 2 4	4/8
ONE 3 2 FOUR	3/8
ONE WORD THEN PUNCTUATION. STOP STOP.	0/9
THE WORD BLANK	0/1
FULLSTOP FULLSTOP	8/4

On the Subject of the Mystic Square

1. **"row/column" on this page alway refers to the table below.**
2. Discovering the Skull before the knight will cause a strike.
3. No other action will cause a strike.
4. How to find the skull:
    1. If the middle position is empty, the skull is under the 7. Continue to step 4.
    2. The middle number determines which row/column to use. If the last digit in the serial number is in one of the five cross positions as shown in the picture on the right, use rows. Otherwise, use columns.
    3. Start from the empty position on the module. Using the table below, consider each number in the row/column and check if it's a direct neighbour to the current position. If it is, continue from that position. The final position is where the skull is located.
    4. To disarm the module, move the sliders into a target constellation. See next page. Take care not to uncover the skull before the knight has been been uncovered.

X		X
	X	
X		X

<

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

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

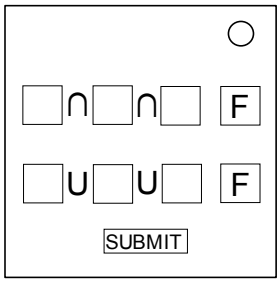
Determining the desired constellation:

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

1	2	3
4	5	6
7	8	

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

On the Subject of Logic



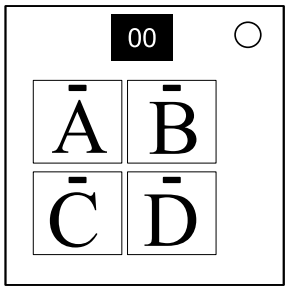
Logic, Logic. That's an easy stuff but with the complexity of this bomb this maybe harder than you think.

- Each row will display 3 letters. Each letter will represent a statement.
- If ALL statement in the top row is true. That row is true.
- If ANY statement in the bottom row is true. That row is true.
- Use T/F button to the right to select True/False.
- Press "Submit" when done.

See Appendix A for indicator identification reference.
See Appendix B for battery identification reference.
See Appendix C for port identification reference.

Letter	This letter is true if:	Letter	This letter is true if:
A	More than 2 batteries.	N	Exactly 1 battery.
B	Has Serial port.	O	No battery.
C	Has Parallel port.	P	Has RJ-45 port.
D	Serial number has vowel.	Q	Has DVI-D port.
E	Serial number doesn't have vowel.	R	More than 5 batteries.
F	Has Stereo RCA port.	S	Has SIG and CAR lit indicators.
G	Has CLR lit indicator.	T	Has at least 2 batteries and PS/2 port.
H	Has IND lit indicator.	U	Has serial and parallel port.
I	Less than 1 battery.	V	Has BOB lit indicator.
J	Has MSA lit indicator.	W	No letter in serial number.
K	Last digit of serial number is odd.	X	Has at least 4 port types.
L	Last digit of serial number is even.	Y	No lit indicator.
M	Has FRK lit indicator.	Z	Has RJ-45 port and Serial port.

On the Subject of Lettered Keys



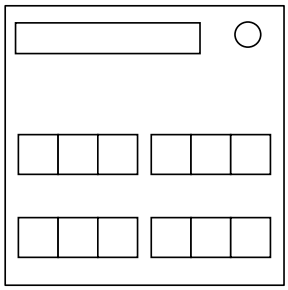
I haven't thought of anything yet...

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 number indicated is equal to sixty-nine, Press the button with the label 'D'
2. If the number indicated is divisible by six, press the button with the label 'A'
3. If there are two or more batteries on the bomb and the number is divisible by three, press the button with the label 'B'
4. If the Serial number contains a 'C' 'E' or '3' and the number is greater than or equal to twenty-two, and less than or equal to seventy-nine, then press the button labelled 'B'
5. Otherwise, if the serial number contains a 'C' 'E' or '3', then press the button labelled 'C'
6. If the indicated number is less than forty-six, then press the button labelled 'D'
7. Otherwise, press the button labelled 'A'

On the Subject of Connection Check



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

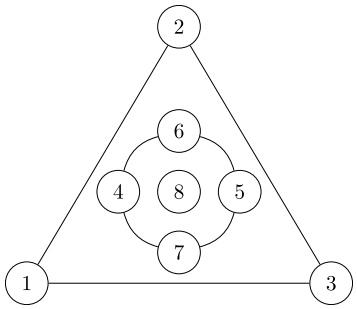
- This module contains 4 number pairs placed on each side of 4 LEDs and a "Check" button.
- To disarm this module, you must follow these steps:

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

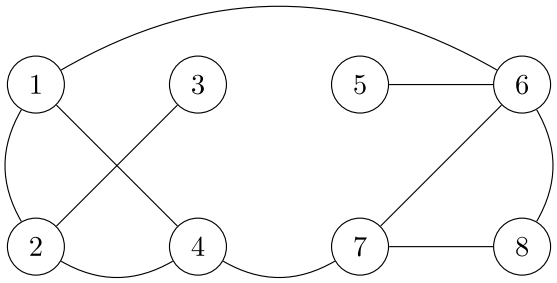
To determine the right chart on the next page you will need a character of the bomb's serial number. Use the following rules to find out which character you need. Then, on the next page, search for that character in the codes just above the charts. The chart with a code containing your character is the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

If all of the numbers on this module are **distinct**, use the **last** character of the serial number.
Otherwise, if there is **more than one** "1" on the module, look at the **first** character of the serial number.
Otherwise, if there is **more than one** "7" on the module, look at the **last** character of the serial number.
Otherwise, if there are **at least three** "2" on the module, look at the **second** character of the serial number.
Otherwise, if there is **no** "5" on the module, look at the **fifth** character of the serial number.
Otherwise, if there are **exactly two** "8"s on the module, look at the **third** character of the serial number.
Otherwise, if there are **more than 6 batteries** or **no batteries** on the bomb, look at the **last** character of the serial number.
Otherwise, **count the number of batteries** on the bomb. Use that number to decide which character of the serial number you should look at. E.g.: if there are 3 batteries, look at the third character of the serial number.

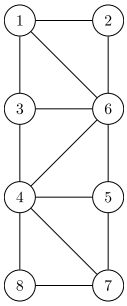
If your digit is contained within **7HPJ** use this chart:



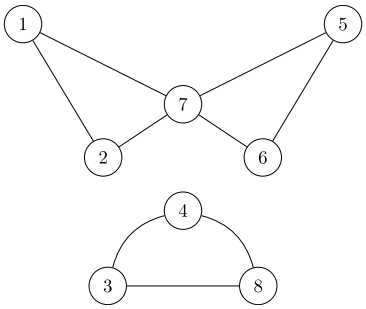
If your digit is contained within **34XYZ** use this chart:



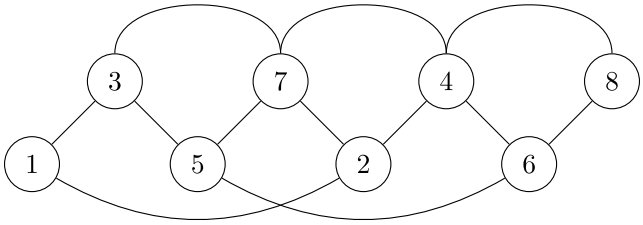
If your digit is contained within **SLIM** use this chart:



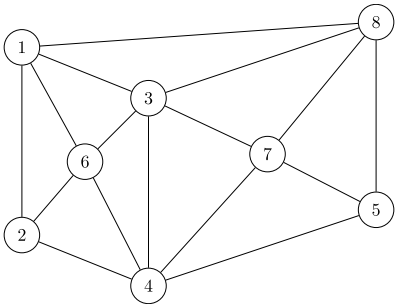
If your digit is contained within **15BRO** use this chart:



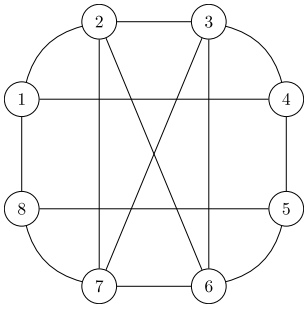
If your digit is contained within **2ODGT** use this chart:



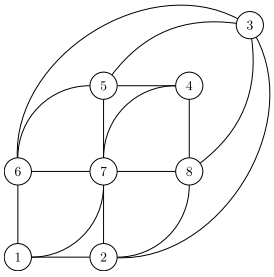
If your digit is contained within **8CAKE** use this chart:



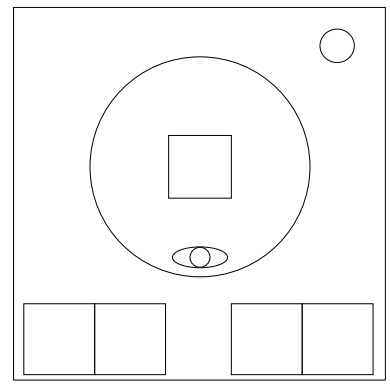
If your digit is contained within **9QVN** use this chart:



If your digit is contained within **6WUF** use this chart:



On the Subject of Orientation



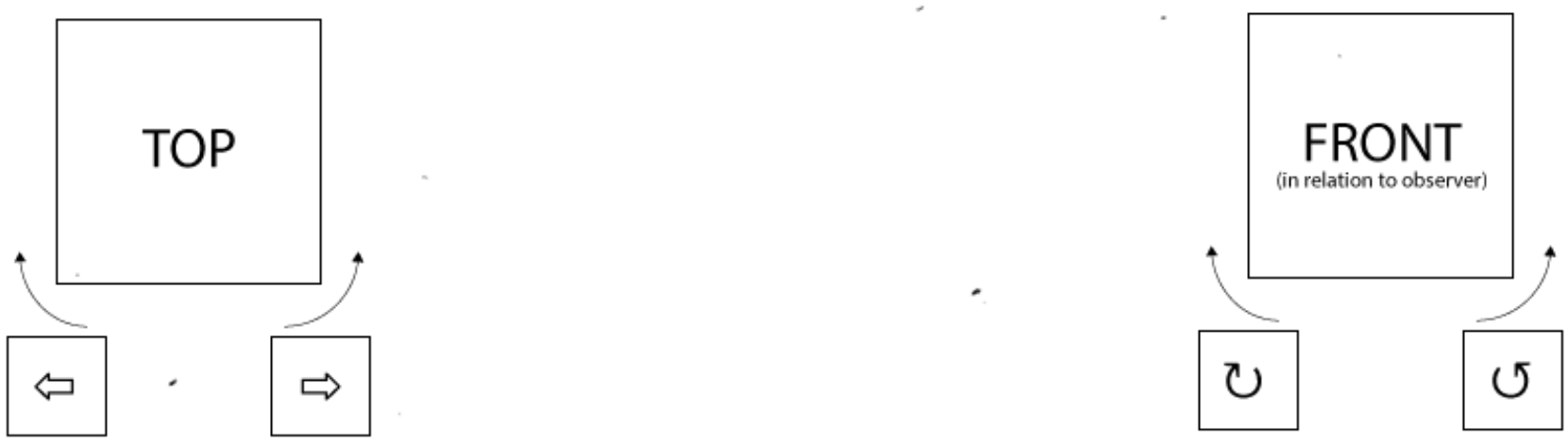
If the bomb doesn't kill us a brain haemorrhage will.

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

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

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

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



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

Rotate the cube so that the initial left face is in the same position as the initial top face, then press the SET button. 4 -> 1

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

Rotate the cube so that the initial bottom face is in the same position as the initial right face, then press the SET button. 6 -> 3

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

Rotate the cube so that the initial bottom face is in the same position as the initial front face and the initial left face is in the same position as the initial bottom face, then press the SET button. 6 -> 2, 4 -> 6

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

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

3 -> 6

5 -> 2

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

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

1 -> 6

Otherwise:

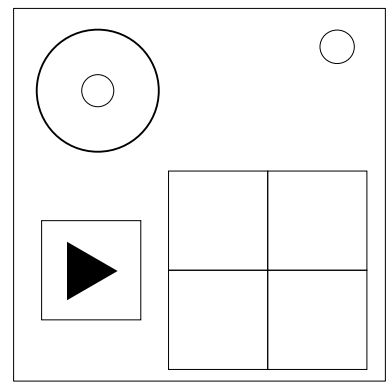
Rotate the cube so that the initial top face is in the same position as the initial left face, then press the SET button.

1 -> 4

On a strike:

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

On the Subject of Listening



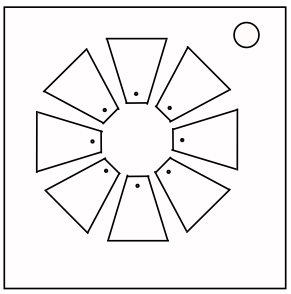
"Why did we send a deaf person to defuse a bomb?" - Person who is no longer alive.

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

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

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

On the Subject of Round Keypads

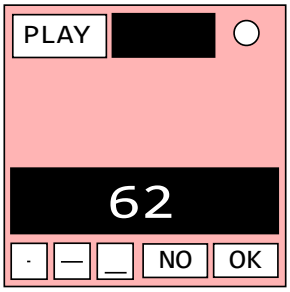


I think someone tried to make this module look really cool, but failed.

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

Ϙ	Ӭ	©	б	Ψ	б
Ѧ	Ϙ	ᔕ	¶	ڜ	Ӭ
ϗ	Ↄ	Ҩ	Ђ	Ђ	✠
Ϟ	Ҩ	Ж	Ӂ	Ͼ	æ
Ӂ	☆	ϩ	Ж	¶	Ψ
Ϡ	Ϡ	ϗ	¿	ϫ	Ӣ
Ↄ	¿	☆	ڜ	★	Ω

On the Subject of Morsematics



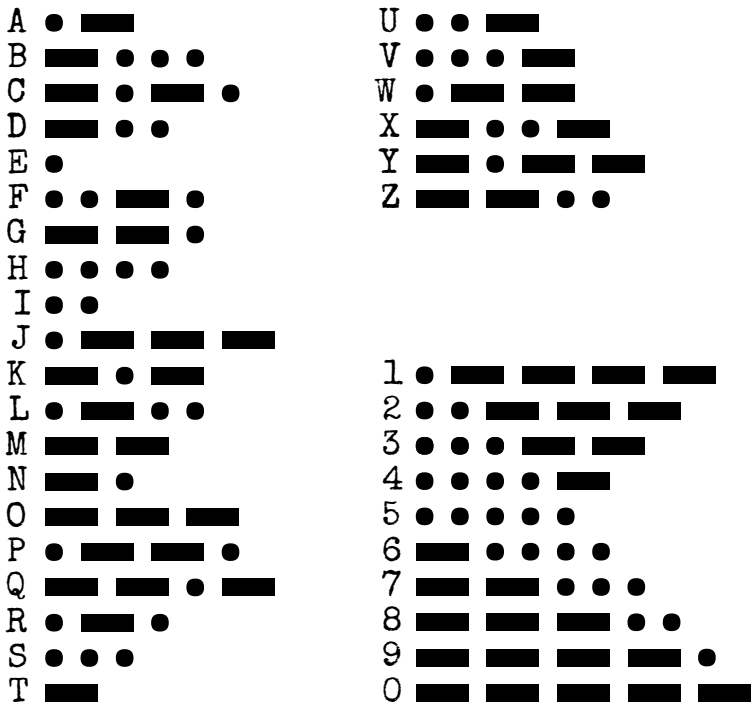
Get it? Because it uses morse and maths! I'll see myself out...

See Appendix MorseOP for mathematical operation reference.

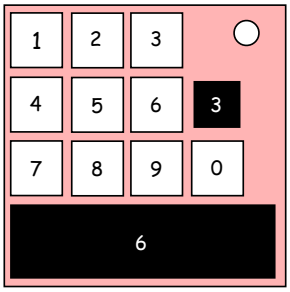
- Interpret the signal from the flashing light using the Morse Code chart.
- The signal will play once upon pressing "Play".
- The signal will be a maths question, encoded in the format <a> <op> <b>.
- A response to the signal is entered using the dot, dash, and space buttons. The answer is sumbitted by pressing "OK".
- Your response is shown in the display. If you make a mistake, press "NO" to clear it.
- Warning: "NO" can only be pressed when the correct answer has a matching number in the time remaining, or when less than 30 seconds remain.

How to Interpret

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



On the Subject of Forget Me Not



This one likes attention, but not too much attention.

- The main display will update on each solved module. The current display stage is shown on the smaller display.
- Add the displayed number to the corresponding number gained from the chart below, and record the least significant digit from the total.
- When all other modules have been completed, the display will turn blank.
- Press the recorded numbers on the keypad in the order they were obtained.

First number:

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

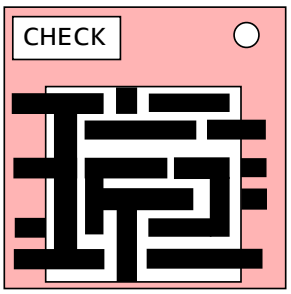
Second number:

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

All other numbers:

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

On the Subject of Plumbing

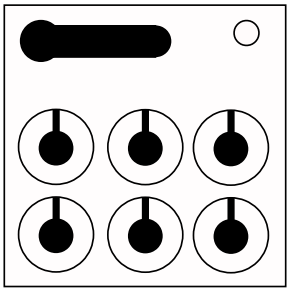


I'd wash your hands after this one...

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

Red Input • For: Serial contains a '1' • For: Exactly 1 RJ45 port • Against: Any duplicate ports • Against: Any duplicate serial characters	Yellow Input • For: Serial contains a '2' • For: One or more Stereo RCA ports • Against: No duplicate ports • Against: Serial contains a '1' or 'L'
Green Input • For: Serial contains 3 or more numbers • For: One or more DVI-D ports • Against: Red Input is inactive • Against: Yellow Input is inactive	Blue Input • Note: Always active if all other inputs are inactive • For: At least 4 unique ports • For: At least 4 batteries • Against: No ports • Against: No batteries
Red Output • For: One or more Serial ports • For: Exactly one battery • Against: Serial contains more than 2 numbers • Against: More than 2 inputs are active	Yellow Output • For: Any duplicate ports • For: Serial contains a '4' or '8' • Against: Serial doesn't contain a '2' • Against: Green Input is active
Green Output • For: Exactly 3 inputs are active • For: Exactly 3 ports are present • Against: Less than 3 ports are present • Against: Serial contains more than 3 numbers	Blue Output • Note: Always active if all other outputs are inactive • For: All inputs are active • For: Any other output is inactive • Against: Less than 2 batteries • Against: No Parallel port

On the Subject of the Safety Safe



This safe either contains immense riches, or is empty.

- All 6 dials must be oriented correctly to solve the module.
- Each dial has a tell, where it clicks louder. This is the starting location for each dial.
- Follow the rules below to determine how far to rotate each dial after the starting location.
- Turn the lever to check the solution. Any correct dials are indicated with a green light, and any incorrect dials are indicated with a red light.

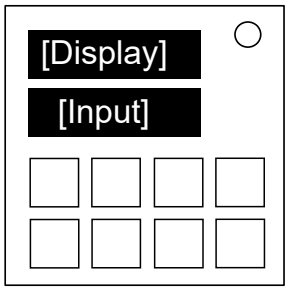
- Starting at 0, add the number of unique ports on the bomb, multiplied by 7.
- Add the number of lit indicators with a matching letter in the serial, multiplied by 5.
- Add the number of unlit indicators with a matching letter in the serial.
- Add the number(s) obtained from the table on the next page, using both the position of the dial and the serial number as reference.
- Note: A full rotation takes 12 turns.

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

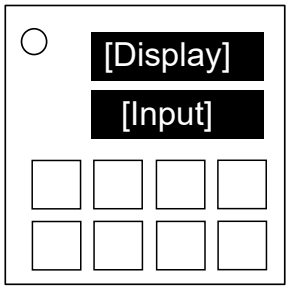
On the Subject of Sword

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

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



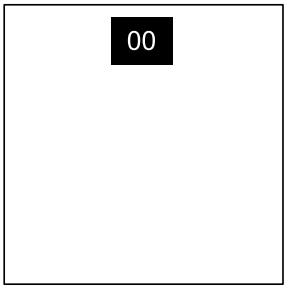
On the Subject of Anagrams



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.



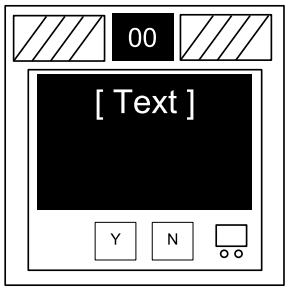
Section 2: Needy Modules

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.

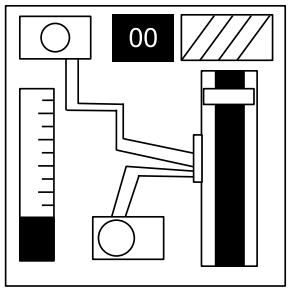
On the Subject of Venting Gas



Computer hacking is hard work! Well, it usually is. This job could probably be performed by a simple drinking bird pressing the same key over and over again.

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

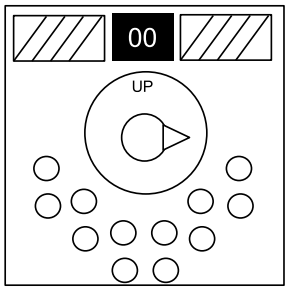
On the Subject of Capacitor Discharge



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

- Discharge the capacitor before it overloads by holding down the lever.

On the Subject of Knobs



Needlessly complicated and endlessly needy. Imagine if such expertise were used to make something other than diabolical puzzles.

- The knob can be turned to one of four different positions.
- The knob must be in the correct position when this module's timer hits zero.
- The correct position can be determined by the on/off configuration of the twelve LEDs.
- Knob positions are relative to the "UP" label, which may be rotated.

LED Configurations

Up Position: 44

		X		X	X
X	X	X	X		X

43

X		X		X	
	X	X		X	X

Down Position: 53

	X	X			X
X	X	X	X		X

32

X		X		X	
	X				X

Left Position: 14

				X	
X			X	X	X

03

				X	
			X	X	

Right Position: 54 / U

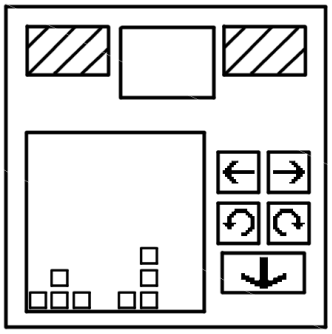
X		X	X	X	X
X	X	X		X	

52 / U

X		X	X		
X	X	X		X	

X = Lit LED

On the Subject of Tetris

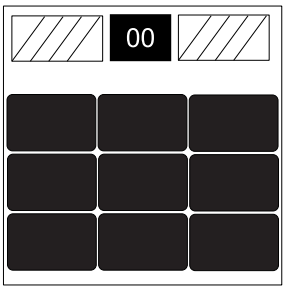


Chances are you've already played many iterations of this game. At this point, how can we be sure that Tetris isn't some kind of meta-virus that propagates itself through game developers and modders?

- To deactivate the module, the player will be required to place 3 Tetris pieces onto the game board.
- Pieces can be rotated, moved left and right, and placed using the arrow buttons.
- Pieces will not fall with time, but instead will be placed as far down as possible.
- Completely filling a row will cause that row to be removed, and other rows will fall down to fill the empty space.
- If the board fills up, the player will be unable to place new blocks, and will gain strikes.

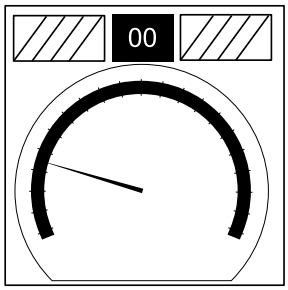
On the Subject of Lights Out

Who knew turning out all the lights was a hard task?



- Press the buttons to switch off all the lights.
- When pressed, a button will invert the lit state of the button itself and the lit state of the adjacent buttons in the four major cardinal directions.

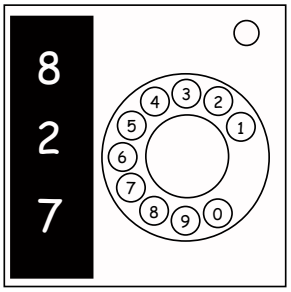
On the Subject of Motion Sense



Don't move. Its explosiveness is based on movement.

- When activated, this module will monitor all rotation activity of the bomb for the duration of the module activation.
- The more you rotate the bomb while active, the higher the needle will rise on the indicator.
- A strike is given if the needle on the gauge reaches the end of the scale.
- The back-light of the gauge will change color and an audible sound will be made when the gauge reaches 80% or more.
- Setting the bomb down, or conversely picking the bomb up, will cause rotation activity and will cause the needle to rise when the module is active.

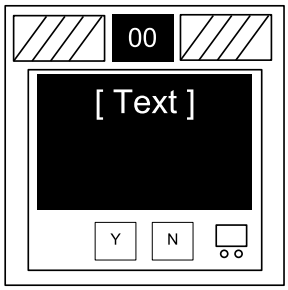
On the Subject of Rotary Phones



Hello, this is emergency services, please hold...

- The display will show 3 numbers, top to bottom, representing a single 3-digit number.
- Whenever the module activates, these numbers will change.
- Add the new number to the old one, take the 3 least significant digits, and enter the resulting number. This number is now your old number.
- If you gain a strike from this module, your old number is replaced with the currently displayed number.

On the Subject of Answering Questions



I hope you studied, it's quiz night!

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

Appendix A: Indicator Identification Reference

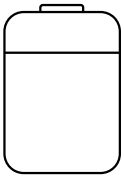
Labelled indicator lights can be found on the sides of the bomb casing.

Common Indicators

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

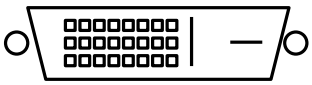
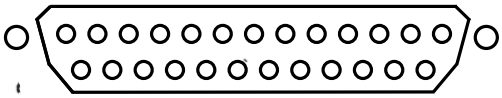
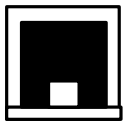
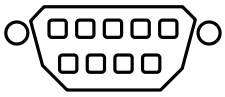
Appendix B: Battery Identification Reference

Common battery types can be found within enclosures on the sides of the bomb casing.

Battery	Type
	AA
	D

Appendix C: Port Identification Reference

Digital and analog ports can be found on sides of the bomb casing.

Port	Name
	DVI-D
	Parallel
	PS/2
	RJ-45
	Serial
	Stereo RCA

APPENDIX CD43

Excerpt from Charles Dickens' "A Christmas Carol".

Scrooge knew he was dead? Of course he did. How could it be otherwise? Scrooge and he were partners for I don't know how many years. Scrooge was his sole executor, his sole administrator, his sole assign, his sole residuary legatee, his sole friend, and sole mourner. And even Scrooge was not so dreadfully cut up by the sad event, but that he was an excellent man of business on the very day of the funeral, and solemnised it with an undoubted bargain. The mention of Marley's funeral brings me back to the point I started from. There is no doubt that Marley was dead. This must be distinctly understood, or nothing wonderful can come of the story I am going to relate. If we were not perfectly convinced that Hamlet's Father died before the play began, there would be nothing more remarkable in his taking a stroll at night, in an easterly wind, upon his own ramparts, than there would be in any other middle-aged gentleman rashly turning out after dark in a breezy spot -- say Saint Paul's Churchyard for instance -- literally to astonish his son's weak mind.

5,4,5,12
21
36
14
8, 18
67

Scrooge never painted out Old Marley's name. There it stood, years afterwards, above the warehouse door: Scrooge and Marley. The firm was known as Scrooge and Marley. Sometimes people new to the business called Scrooge Scrooge, and sometimes Marley, but he answered to both names. It was all the same to him.

7, 12
8, 18
7

Oh! But he was a tight-fisted hand at the grind-stone, Scrooge! A squeezing, wrenching, grasping, scraping, clutching, covetous, old sinner! Hard and sharp as flint, from which no steel had ever struck out generous fire; secret, and self-contained, and solitary as an oyster. The cold within him froze his old features, nipped his pointed nose, shrivelled his cheek, stiffened his gait; made his eyes red, his thin lips blue and spoke out shrewdly in his grating voice. A frosty rime was on his head, and on his eyebrows, and his wiry chin. He carried his own low temperature always about with him; he iced his office in the dogdays; and didn't thaw it one degree at Christmas.

1, 10, 9
15
8
18
16
15
10, 7
8

External heat and cold had little influence on Scrooge. No warmth could warm, no wintry weather chill him. No wind that blew was bitterer than he, no falling snow was more intent upon its purpose, no pelting rain less open to entreaty. Foul weather didn't know where to have him. The heaviest rain, and snow, and hail, and sleet, could boast of the advantage over him in only one respect. They often 'came down' handsomely, and Scrooge never did.

9, 9
24
8
20
9

Nobody ever stopped him in the street to say, with gladsome looks, `My dear Scrooge, how are you? When will you come to see me?' No beggars implored him to bestow a trifle, no children asked him what it was o'clock, no man or woman ever once in all his life inquired the way to such and such a place, of Scrooge. Even the blind men's dogs appeared to know him; and when they saw him coming on, would tug their owners into doorways and up courts; and then would wag their tails as though they said, `No eye at all is better than an evil eye, dark master!'

18
7, 37
9
16
22

But what did Scrooge care! It was the very thing he liked. To edge his way along the crowded paths of life, warning all human sympathy to keep its distance, was what the knowing ones call `nuts' to Scrooge.

5, 7, 27

APPENDIX CD44

Word and Letter Frequency in Charles Dickens' "A Christmas Carol".

Frequent 2 letter words

- 16x TO
- 11x NO
- 10x HE
- 9x IN
- 8x OF
- 7x IT

Frequent 3 letter words

1. 23x AND
2. 22x THE
3. 22x HIS
4. 14x WAS
5. 11x HIM
6. 4x OUT

Frequent 4 letter words

1. 6x SOLE
2. 4x THAT

Frequent 5 letter words

1. 4x THERE
2. 4x WOULD

Frequent 6 letter words

1. 4x MARLEY

Frequent 7 letter words

1. 12x SCROOGE

Frequent 8 letter words

1. 2x BUSINESS

Frequent 9 letter words

1. 2x SOMETIMES

Appendix MorseOP: Mathematical Operations

MULT, TIMES	Multiply the two numbers together.
OVER, DIV	Divide the first number by the second.
MOD, REM	Divide the first number by the second, and take the remainder.
POW, EXP	Take the first number, and apply the second number as a power.
XOR	Apply a bitwise XOR operation to the two numbers.