Defuse the Bomb

A CSC 102 Project

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BOMB DEFUSAL MANUAL

Version 1

Verification Code: <00_JItT200*>

The Game

This project is based on the game **Keep Talking and Nobody Explodes**[1], a cooperative bomb defusing party game. As the game designers put it, “You’re alone in a room with a bomb. Your friends, the 'Experts', have the manual needed to defuse it. But there’s a catch: the Experts can’t see the bomb, so everyone will need to talk it out – fast! Put your puzzle-solving and communication skills to the test as you and your friends race to defuse bombs quickly before time runs out!”

Their version is a software game. Our version takes the idea and realizes it as a physical device with buttons, switches, and more! Although our version can be played just like theirs, players can interact with both the bomb and this document at the same time (i.e., players can both defuse the bomb and serve as the “Experts”, using this document to help disarm the phases).

The backend of our version of the game is a Raspberry Pi[2] computer that combines a typical computer with the ability to interact with the outside world through sensors. The underlying

[1]https://keeptalkinggame.com/

[2]https://www.raspberrypi.com/

software is written in Python[3] and is the result of a final group-based project in CSC 102 (The Science of Computing II) in the Computer Science Program at the University of Tampa.

Defusing Bombs

The bomb will "explode" when its countdown reaches 0:00 or when too many strikes have occurred. You defuse the bomb by disarming all of its "phases" before the countdown expires.

Phases

The bomb has four phases, each of which must be disarmed to defuse the bomb. The phases can be disarmed in any order. Once a phase is disarmed, it becomes inactive and changing it doesn't affect the bomb. Instructions for disarming the phases are provided in this document.

Strikes

A mistake in disarming a phase results in a strike. Get too many strikes, and the bomb "explodes". Sometimes, the remaining countdown time will be decreased and/or go by faster when a certain number of strikes has occurred.

Information

A different version of the bomb is randomly presented each time it is "booted". There are 6,270 unique versions of the bomb with a whopping 1,176,000 possible variations! Disarming some phases will require specific information about the bomb. Pay close attention to the "bootup" text on the bomb's screen.

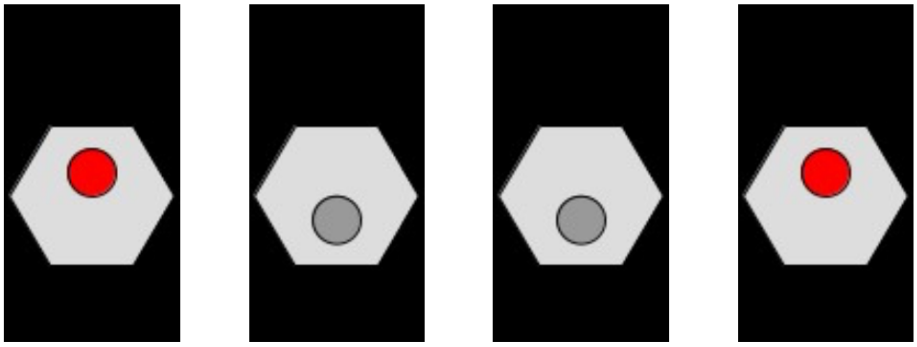
[3]https://www.python.org/

Regarding the Toggles

It's so tempting to just toggle the switches over and over with those bright red LEDs and cool switch covers that you can flip. But one wrong toggle gets you one step closer to...BOOM!

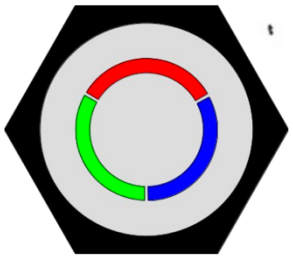
The correct state of each toggle switch is based on the bomb's serial number. Toggle the switches are labeled ABCD. The correct toggles are labeled in the bombs serial number. For example, if the serial number is 12A34BCD, that means you would have to turn all of the toggles on.

A B C D



Regarding the Button

The Button

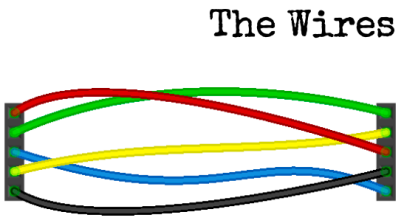


The button behaves in unpredictable ways. Follow the instructions below closely to avoid a strike!

At some point, you will need to press the button.
However, releasing it is the hard part. The button has a lighted ring around it that can be red, green, or blue. Release the button according to the following instructions:

Button color	Release instructions
Red	Release the button at any time.
Green	Release the button when the first numeric digit found in the bomb's serial number appears anywhere in the seconds of the countdown timer.
Blue	Release the button when the last numeric digit found in the bomb's serial number appears anywhere in the seconds of the countdown timer.
Other	Here's to hoping that you never run across this case...

Regarding the Wires



Which wires should you "cut"? One wrong "snip" leads you one step closer to an "explosion"!

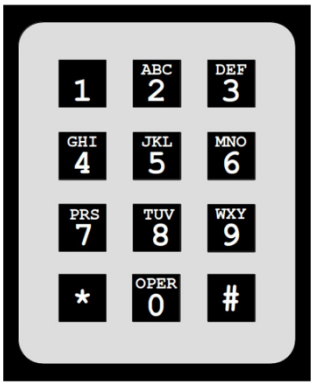
Wires are binary base two. 5 wires/11111 = 31 bits, . You must add the digits in the serial number and cut the wires that get it down to that value.

Example: 13ACD56. Would mean you would have to cut wire the first wire to get 15. 01111 = 15.

From left to right its 2^5, 2^4, 2^3, 2^2, 2^1.

Regarding the Keypad

The Keypad



Which wires should you "cut"? One wrong "snip" leads you one step closer to an "explosion"!

Important information about the keypad is provided in the bomb's "bootup" text. The correct combination can be determined by first decrypting a keyword with a key using an alphabetic substitution cipher – and then looking up the result in the table below to obtain a passphrase. A substitution cipher with a numeric key represents a rotation of the alphabet. For a key of 5, for example, the alphabet is shifted five places such that A becomes F, B becomes G, …, and Z becomes E. Using this shift, for example, the word "THEY" encrypts to "YMJD". Decrypting "YMJD" back to "THEY" is merely doing the reverse, effectively "subtracting" five positions from each letter. To enter the passphrase correctly, you must enter its numeric combination on the keypad. To do so, press each button on the keypad with the required letter only once.

Keyword	Passphrase
BADGER	RIVER
BANDIT	FADED
CABLES	SPINY
CANOPY	THROW
FIELDS	CYCLE
FIERCE	ALOOF
IMMUNE	STOLE
IMPACT	TOADY

Keyword	Passphrase
MIDWAY	FEIGN
MIGHTY	CARVE
REBORN	TRICK
RECALL	CLIMB
SYMBOL	LEAVE
SYSTEM	FOXES
WIDELY	BOUND
WINGED	YACHT