On the Subject of Memory Management

Your flavor text should go here.

- This module allows you direct access to one of the memory chips of the bomb. Luckily, all of the accesible memory addresses can be modified without worry of affecting the rest of the bomb.
- Note that all numbers in the form 0xXY in this manual refer to the hexadecimal number XY.
- The interface displays the values of memory addresses 0x10-0x13 in the top row and 0x20-0x2F in the remaining four rows (see Section 1 for details).
- If necessary, you must change the certain memory locations to the indicated values (see Section 2) using the below instructions (see Section 3).
- Enter instructions one hexadecimal character at a time.
- In addition, this interface is equipped with B.E.R. technology, so any mistakes will be caught and displayed with an error message (see Section 4).

Section 1. Important Memory Locations

Memory Location	Name	Description
0x10	RES	Always set to the result/error code of the latest instruction or error message.
0x11	RES_PTR	Always set to the second location where the result of the latest instruction will be stored, or 0x10 if such second location has not been set (see instruction 0xE0).
0x12	BYT_CTR	Incremented with each byte inputted. Starts at 0x00.
0x13	INS_CTR	Incremented with each instruction inputted. Starts at 0x00.
0x20-0x2F	MEM	Accesible memory. Stores information on many different parts of the bomb, modify with care.

Section 2. Required Memory Changes

In most cases, the memory will be set up properly. However, in the off-chance that there is any values that need to be changed, there should be a note on the module letting you know.

Note that some managers make mistakes or use uncommon practices when reporting the required changes. Here is a list of the most common ones. Be sure to account for these.

Manager Name	Notes
Matt Roberts	Matt almost always finds a way to swap the latter two memory addresses around.
Reese Johnson	Reese likes to record memory addresses in hexadecimal, as normal, but data values in decimal.

Section 3. Built-in Instructions

All instructions take either one or two memory addresses as arguments and will act on the values at those addresses. There are 16 different instructions, each of which has INDEPENDENT and RELATIVE modes (signalled by 0xEX vs 0xFX instruction codes, respectively). In independent mode, instruction results will be stored in RES and the location specified by the value of RES_PTR (see Section 1). In relative mode, instruction results will be stored in RES and the first address argument passed with the instruction.

Instruction Code	Name/ Arity	Description
0xX0	STR_1	Sets the output location of the next instruction to the specified memory address. Returns the inputted address.
0xX1	INC_1	Returns the value at the specified memory address, incremented by 1.
0xX2	DEC_1	Returns the value at the specified memory address, decremented by 1.
0xX3	RST_1	Resets the value at the specified memory address to 0. Returns the previous value at that address.

Instruction Code	Name/ Arity	Description
0xX4	ADD_2	Returns the sum of the values at the specified memory addresses.
0xX5	SUB_2	Returns the difference of the values at the specified memory addresses.
0xX6	MUL_2	Returns the product of the values at the specified memory addresses.
0xX7	DIV_2	Returns the quotient of the values at the specified memory addresses.
0xX8	VAL_1	Returns the value at the specified memory address.
0xX9	AND_2	Returns the bitwise AND of the values at the specified memory addresses.
0xXA	IOR_2	Returns the bitwise OR of the values at the specified memory addresses.
0xXB	EOR_2	Returns the bitwise XOR of the values at the specified memory addresses.
0xXC	NOT_1	Returns the bitwise NOT of the value at the specified memory address.
0xXD	NAN_2	Returns the bitwise NAND of the values at the specified memory addresses.
0xXE	INR_2	Returns the bitwise NOR of the values at the specified memory addresses.
0xXF	ENR_2	Returns the bitwise XNOR of the values at the specified memory addresses.

Section 4. Error Codes

Error codes are displayed for a small time whenever an error or mistake occurs.

Error Code	Description
0xA0	Instruction does not exist.
0xA1	Memory location is not accessible.
0xE0	Input buffer non-empty. Clearing buffer.
0xEF	Unknown error.
0xFF	System overload. Resetting to initial state.

Section 5. Resetting the Memory

To reset the memory of the chip to the initial state, use the reset instruction (0xE3) to set INS_CNT to 0x00.