← Project 2: EGG-stra Credit

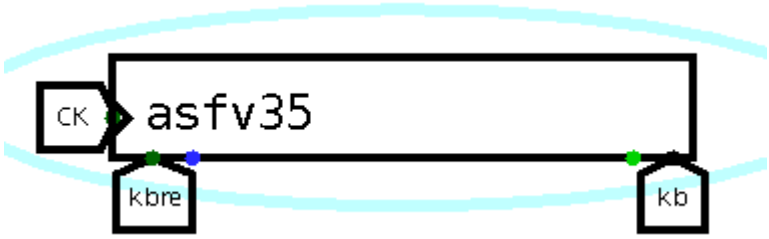
Here are the brief descriptions of the extra credit instructions:

Points	Format	Opcode	Mnemonic	Operation
2	R	`011011`	`in rd`	read a character from the keyboard into `rd`
3	R	`011100`	`out rs`	send `rs`'s value to the teletype display

The keyboard: `in rd`

This one is pretty straightforward so you should give it a shot!

On your main circuit, place an **Input/Output > Keyboard** component. It kinda looks like a big wide register. Hey, a **triangle input...** what do you think goes in there?



This component lets you type in anything and stores it in a buffer. Try poking it with the hand tool and typing.

The far left input on the bottom is **read enable.** When this is 1, the first character from the buffer is taken out and sent out the far *right* output on the bottom.

The `in` instruction will read one character from the keyboard component and store it in `rd`. That probably means you'll have to slightly modify your control and interconnect to accommodate it.

> Don't forget: this instruction writes to the registers, too. Easy thing to miss.

Go run the keyboard test program to see if it works.

The teletype display: `out rs`

This one's also pretty easy… do iiiiiiit

On your main circuit, place an **Input/Output > TTY** component. (TTY is short for an ancient word, "teletype"; look up its history 😬)

Leave the size at 8 rows and 32 columns, but you can change the background and color to whatever you want! If you change the background, you can change the "alpha" (transparency) if you like.

You can ignore the "Clear" input.

The `out` instruction should send the value of `rs` to the TTY display. Sound familiar?

Go run the test program to see if it works.