# Building Ben Eater's 8-bit computer from scratch with only experience of high level langauges

## Why?

Found out about the project by youtube recommending the binarary adition video using logic gates, it peaked my interest and I started exploring his channel and website.

I've been interested in computers and electronics from a young age, recently started a career as a full-stack software dev in ruby/javascript (high level langagues). But have been interested in how computers work from the ground up since the intro to computing module in my mecheng degree, where we went over the basics of how a cpu works. Having not used low level langauges before I knew it was a large gap in my knowledge, and that learning about this would likely improve my current understanding of lanagues I work in, and possibly open up new opperturnities for hobbies and work.

I have a basic understanding of electronics, such as the physics of circuits and how semiconductors and gates work. But further than that it's a black hole.

Saw the 8-bit computer project, thought I might aswell jump in at the deep end and force myself to get the deeper understanding I want. It's also fun learning a new field of technology, particularly one where it provides potential to create almost anything.

Ben Eater's community seems like a nice cult I want to be part of. I intend to do this project while learning and understanding what I am doing, so it'll probably take a lot longer than I'd expect if I was just plugging parts in from reading a schematic. Guess I'll find out.

## Part 1 - Buying parts

Since I live in the UK, I decided not to buy the package he sells due to import tax and shipping, so I went about going throught the list and buying chips.

Took about 4 hours of trying to find the places to buy the components, some of which seem hard/impossible to get locally in the UK. Regarding chip numbers, commonly I found the correct number but with additional letters such as an N after it. Not sure if this means anything yet, I breifly read the datasheets (which after watching a couple videos seems very important), and have confidence I will be able to wire it up correctly if I understand what the chip does and it's spec. However, it's likely I'll look back on this and cringe with how wrong I was haha.

Here's the list of what I bought, from various uk suppliers such as rapid, rs components, and farnell. However, some speific ones such as the EEPROM chip and RAM seemed specific and I had to get from a specialist seller on eBay.

Total cost for components came to: £…

Total cost for tools came to £…

For a very basic computer this might seem like a lot of money, and I did get a couple comments from the missus asking me what more I could do than a £20 calculator while costing the same amount as my dev machine. To that the only answer I have at the time is 'teach me C' and 'it's a hobby'. Hopefully, I learn a lot and have some fun.