Coding IRL

Me

- Hi, I'm Bob
- I write code, and people give me money for it
- It's pretty sweet

You've Started Programming!

- Rad.

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- So... what are you going to do with that?

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  - Programmers can be found in many, many different areas
  - Lots of people who aren’t “coders” can use coding as a tool

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- This means two things:
  - Programmers can be found in many, many different areas
  - Lots of people who aren't "coders" can use coding as a tool
- It also means you code for totally non-career things, such as
  - fun
  - pranks
  - goof-em-ups
  - art

Me, redux

- ~~I write code, people give me money for it~~
- Actually, I...
  - Majored in English (not Computer Science)
  - Got a Masters of Arts in Linguistics
  - Learned to code in grad school to support my research
  - Discovered I liked coding and went use it in a LOT of different areas

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  - Conversational analysis for pharma market research
  - Campaign finance data collection and visualization
  - Building predictive models to recommend health insurance plans
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- What do these jobs have in common?
  - Used my coding skills
  - Learned new skills
  - **Learned about an entirely new domain**

Coding with a purpose

It's fun at first, but just telling computers what to do gets pretty boring imo

```
def hello_world():
    print "Hello World."
```

Writing code really gets interesting when you make computers do things *for a reason*.

It's also the best way to get better at coding:

- Apply your coding skill to a real problem in some domain.
- Learn something about the world, then express that knowledge through code.

Going Shopping

Let's take a really simple domain: shopping at a grocery store. I know about this domain because I do it all the time. I can combine that domain knowledge with my storytelling skills to write this story for you:

> *Once upon a time, I went to Acme to buy food. I had a list of stuff in mind that I needed to get: apples, milk, bread, eggs, waffles and ice cream. I got a shopping cart and wheeled it inside.*
>
> *Then I looked for the stuff I needed. When I found apples, I put them into my shopping cart. Same with the milk and bread, etc.*
>
> *When I had found everything I needed, I went to the checkout. The cashier scanned all of the items and told me the total price. I gave them my credit card, paid, and took everything with me.*
>
> *And they all lived happily ever after.*

Cool story, bro

... *riveting*, I know. But that story could've been way longer. I focused on some key details:

- I went to Acme **to buy food**.
- I had **list of stuff in mind that I needed to get**
- I got a **shopping cart**
- When I found things, I **put them into my shopping cart**.
- I **went to the checkout**.
- The cashier **scanned all of the items** and **told me the total price.**
- I **gave them my credit card, paid,** and took everything with me.

Things I didn't mention:

- the podcast I was listening to
- what color my socks were
- the name of the cashier
- how I got to the store, and how I got home

What does this have to do with code?

EVERYTHING.

- Writing code is just another form of writing!
- Computers might be shinier and more expensive, but they're not any smarter than a pencil and paper.

Dev Stories

In fact, this is *so* true, that some software developers actually chunk up their work into "stories." These are the to-do's that are necessary for building a product.

story	needed
I went to Acme **to buy food**.	`FoodItem` class
I had **list of stuff in mind that I needed to get**	`ShoppingList` (editable, user-owned)
I got a **shopping cart**	`ShoppingCart` class
When I found things, I **put them into my shopping cart**.	`ShoppingCart.add(FoodItem)`
I **went to the checkout**.	`Checkout` interface
The cashier **scanned all of the items**	`Checkout.scan(ShoppingCart)`
and **told me the total price.**	`Checkout.reportTotalCost()`
I **gave them my credit card, paid,**	`Payment` service

Shopping domain, in code

```
class FoodItem:
    name: str
    price: float

class ShoppingList:
    items_to_buy: Mapping[FoodItem, boolean]

class ShoppingCart:
    items: list[FoodItem]

    def add(food: FoodItem):
        self.items.append(food)

class Checkout:

    def scan(cart: ShoppingCart):
        price = 0.0
        for item in cart.items:
            price += self.look_up_price(item)
        self.reportTotalCost(price)

    def reportTotalCost(price):
        print "That will be ${}".format(price)
```

Writing well means learning

To write great code, you need:

- Deep understanding of the domain
- Ability to model concrete and abstract concepts
- Careful design of the interfaces and relationships involved
- **Curiosity: willingness to learn new things**
  - even about topics you *think* you know everything about!

Coding is creative

People who code are creating new things. Their code can

- represent the real world
- represent our understanding of real things
- help us to imagine things that aren't real

Coding is a skill that can be useful in business, art, science, engineering and more.

So... What do you want to create?

- Websites
- Art
- Mobile Apps
- Robots
- Artificial Intelligence
- Games
- Maps
- Data Visualizations
- Research/Analysis
- Other fun hacks

Websites

Working on building websites is a HUGE part of the tech industry. When you're writing code for the web, there aretwo major focus areas:

- client-side (aka "Frontend")
- server-side (aka "Backend")

Websites: Server-Side

- Interfacing with databases
- Authenticating users
- Searching for information to be displayed
- Preparing content for the client
- Making data available directly through APIs

Things to learn

- Node.js, Ruby/Rails, Python
- Web Application Frameworks like express, Flask, Django
- Databases: SQL, Elasticsearch, Redis

Websites: Client-side

Things to learn:

- Javascript, HTML & CSS
- Design principles

Art

Mobile Apps

Robots

Artificial Intelligence

Games

Maps

Data Visualizations

Research/Analysis

Other fun hacks

Thanks!

- questions: blannon@gmail.com
- this presentation: https://github.com/boblannon/coding-irl_20191213

Where to start:

- Getting Started With The Web
- awesome-javascript-learning
- Codepen.io