

Prototype X

Fullstack Software Engineering Curriculum

Problem

- Coding bootcamps (and college) are expensive and not accessible to everyone.
- Online learning materials are too diverse and unstructured and simply replicate traditional education on the internet.
- Job growth for software developers remains high and outpaces the growth in talent.
- Pay for software developers is high and increasing.
- Many traditional careers are disappearing.

More and more people want to become software developers but many of these people do not have an accessible and affordable path to achieve this goal.

Solution

- A new structured, highly opinionated, skill-based learned curriculum to teach fullstack software development skills.
- Fullstack TypeScript, React, and NodeJS web and mobile development.
- Challenge and project based to build hands-on skill and a portfolio of work.
- Easily affordable to anyone who owns a computer, accessible to anyone who has internet access.
- No/minimal external content.

Imagine the process and outcomes of a coding bootcamp automated, put online, and sold to the entire world at an order of magnitude lower price.

4 Questions Graduates Can Answer

1. What are the fundamentals of computer programming?
2. How do teams build, test, and ship modern software applications?
3. What is good software design/architecture?
4. How do I get a job as a software engineer?

Students who complete the full curriculum will be equipped with real hireable skills and the resources to move forward through job applications and interviews to get a real job.

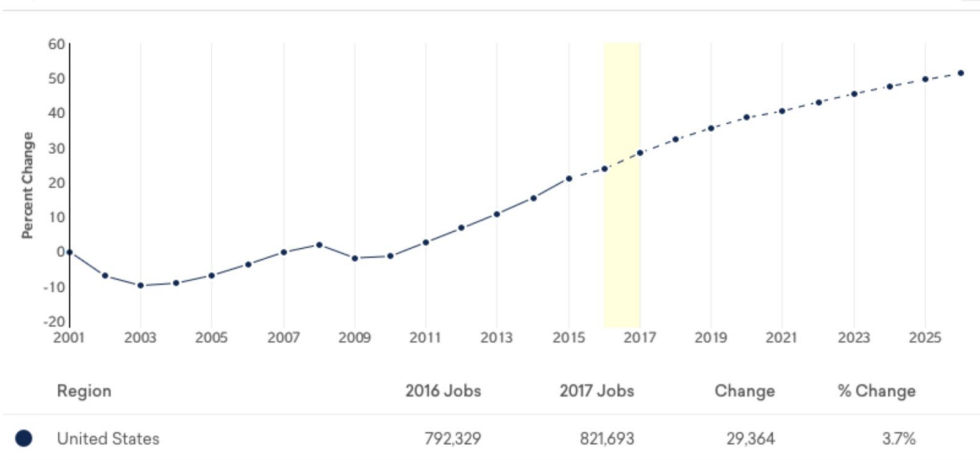
Market Research

- Currently 110+ coding bootcamps (~50 online offerings) with an average price of \$13,584 USD for a total market size of \$309 million USD. The coding bootcamp market has grown ~10x in the last 6 years.
- There are 20+ online education platforms (not individuals) with varying business models. Generally, these are priced less than \$500 dollars per item and largely include video lessons, tutorials, and lectures. These platforms easily have user bases in the millions.
- There are many new specialized platforms focusing solely on the software engineering interview process (Outco, AlgoExpert, Triplebyte, etc.)
- The learning platform Egghead.io generates monthly revenues of \$250,000 USD.
- According to Crunchbase in 2016 Codecademy had a valuation of \$100-\$500 million USD. Codecademy has currently raised nearly \$50 million USD and employs 90 people.
- Based on these observations, the total market size for coding-related education is probably \$500m-\$1b USD.

CS Degree | Coding Bootcamps | Online Platforms

Industry Size

- The US Bureau of Labor Statistics ranks software developers in the top 20 of highest growing jobs, and outside of healthcare related jobs software developers are the highest paid.
- Various reports and studies from different organizations estimate hundreds of thousands to millions of software developer jobs left unfilled in the coming years.
- Coding bootcamps graduate ~20,000+ students per year.
- US universities graduate ~50,000+ computer science graduates per year, with China and India both graduating 100,000-200,000+ per year.
- Online education platforms easily achieve millions of users.
- Growth in computer science majors does not reflect the growing demand for these careers.
- There may be around ~20 million software developers in the world now, and this is projected to grow to around ~25 million over the next several years.



The talent gap will probably persist, with 100,000s of software developer roles unfilled in the next decade.

There will easily be millions of people interested in learning to code in the next decade.

OCCUPATION	GROWTH RATE, 2018-28	2018 MEDIAN PAY
Solar photovoltaic installers	63%	\$42,680 per year
Wind turbine service technicians	57%	\$54,370 per year
Home health aides	37%	\$24,200 per year
Personal care aides	36%	\$24,020 per year
Occupational therapy assistants	33%	\$60,220 per year
Information security analysts	32%	\$98,350 per year
Physician assistants	31%	\$108,610 per year
Statisticians	31%	\$87,780 per year
Nurse practitioners	28%	\$107,030 per year
Speech-language pathologists	27%	\$77,510 per year
Physical therapist assistants	27%	\$58,040 per year
Genetic counselors	27%	\$80,370 per year
Mathematicians	26%	\$101,900 per year
Operations research analysts	26%	\$83,390 per year
Software developers, applications	26%	\$103,620 per year

Curriculum Design

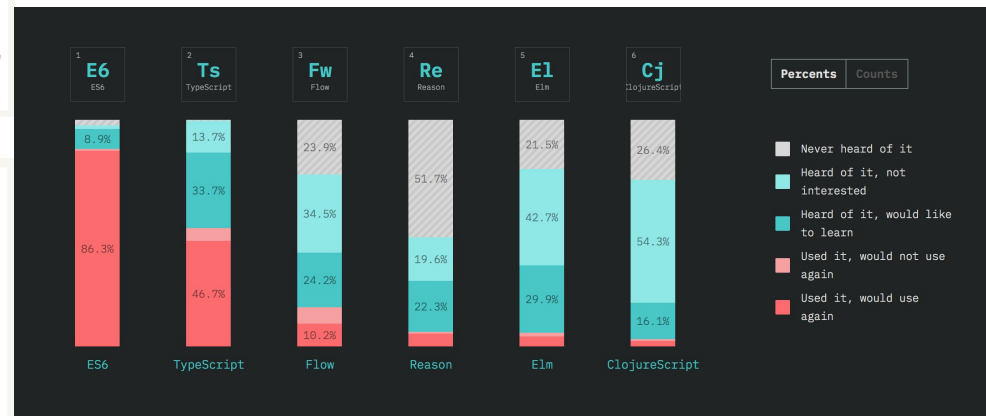
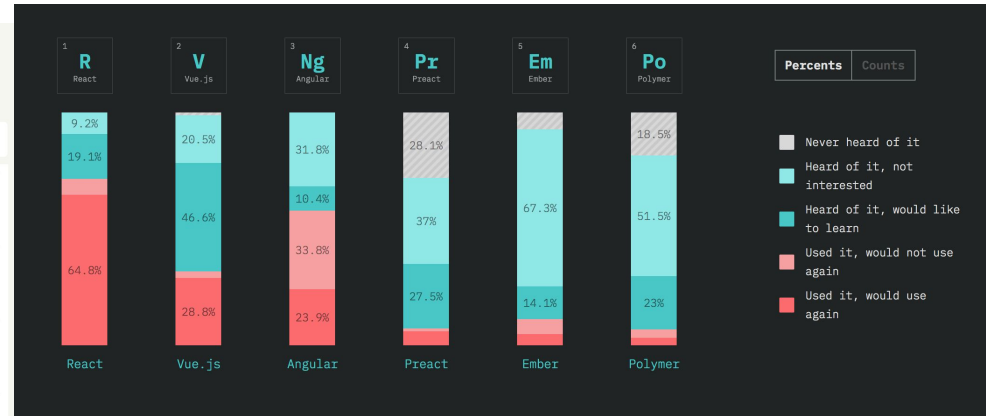
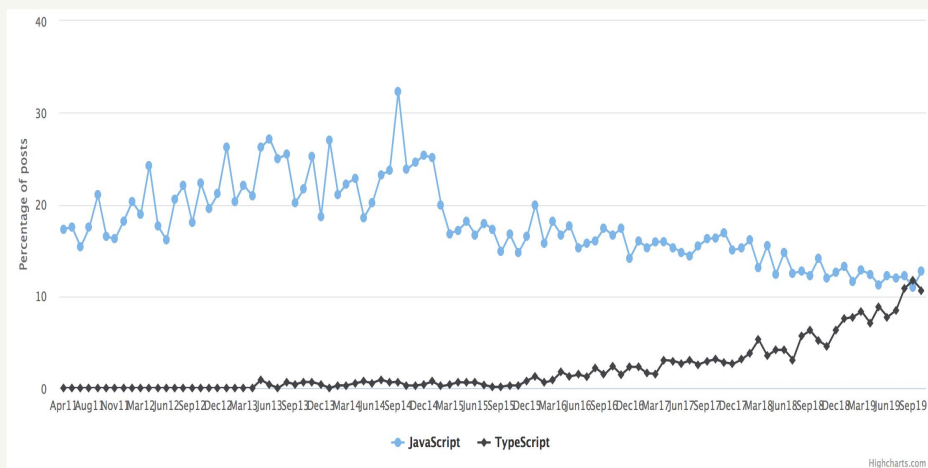
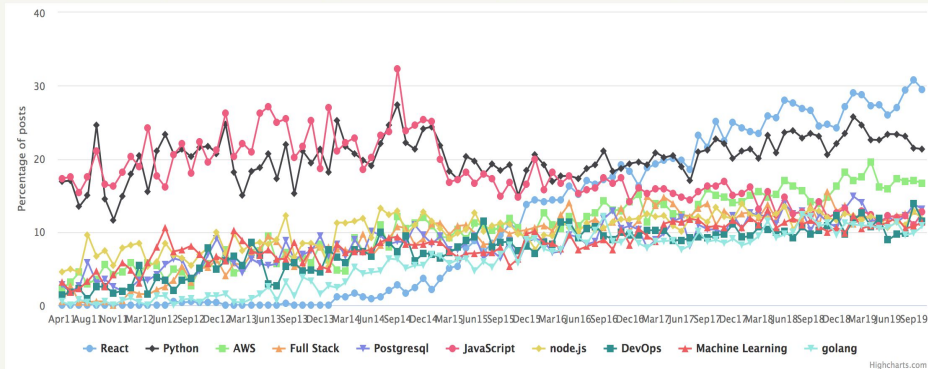
- Programming Fundamentals (TypeScript)
- Git, Terminal and Team Collaboration (GitHub, Kanban, Agile/Scrum)
- Async Programming & REST APIs (HTTP)
- Frontend/UI Programming (React, Redux)
- Backend & Server Programming (Node/Express/NestJS)
- Databases (PostgreSQL, MongoDB/Redis)
- Mobile App Development (React Native/Expo)
- Testing & Automation (Jest, Cypress, etc.)
- Debugging & Refactoring (Tools and skills used for working with code)
- Software Delivery & Deployment (CircleCI, Netlify, AWS/GCP)
- Capstone Projects (1-3 fullstack apps: 1 review required for course completion)
- Career & Interviewing Section (1:1 coaching sessions, job application advice, resources and steps)
- Alumni Section (advanced topics, additional resources, networking, etc.)

Fullstack TypeScript, React, and NodeJS Web and Mobile Development

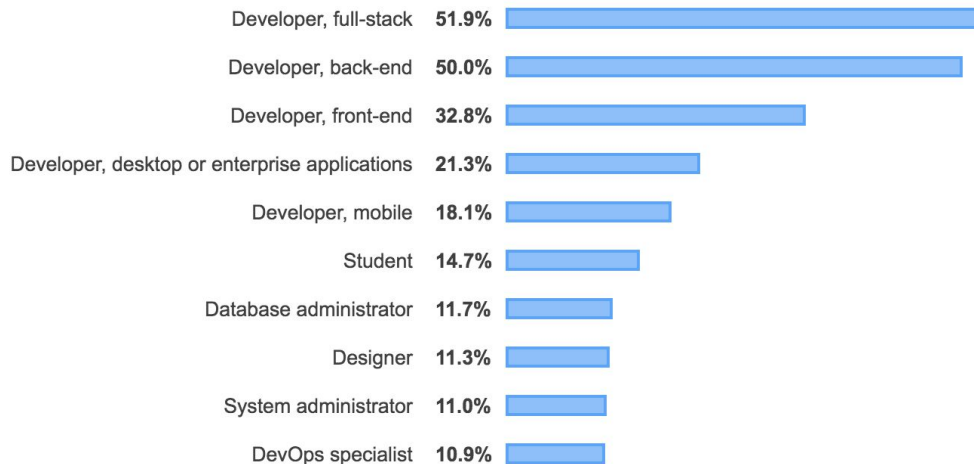
No sign of React Falling Back

October 2019 Hacker News Hiring Trends

Top 10 or compare Compare



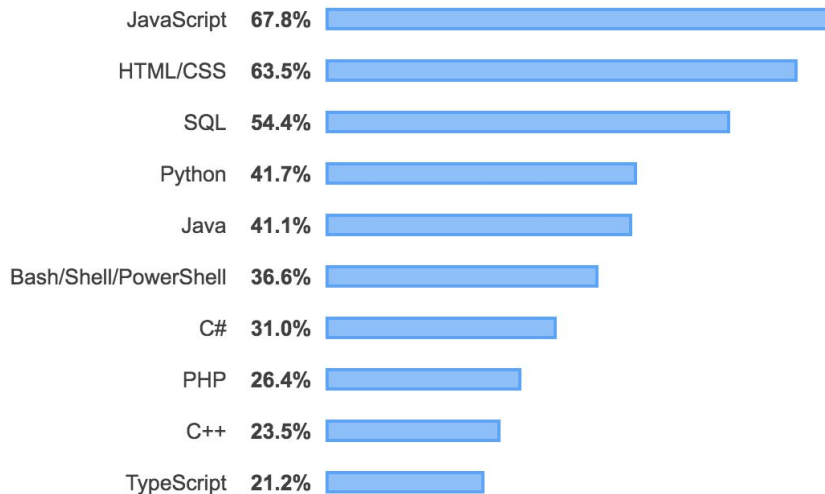
React & TypeScript Industry Trends



StackOverflow software developer job trends.

Fullstack roles are the most common.

JS is the most common language (HTML/CSS, and TS) feature prominently as well.



Risks

- Competitor Risk (LOW)
- Technical Risk (LOW)
- False Assumption Risk (LOW)
- **Execution Risk (HIGH)**
- **Distribution Risk (HIGH)**
- Legal Risk (UNKNOWN)
- Theft Risk (= Competitor Risk)
- ...?

There are currently over 110 coding bootcamps. 15 of these didn't exist 2 years ago.

Is the market too crowded?

Business Model

- Programming fundamentals curriculum is always free and accessible without signup.
- Full curriculum requires payment. Payment grants lifetime access to the fullstack curriculum.
- The product could be priced anywhere between \$25-\$500 USD.
- Additional product features could be added in the future, e.g. 1:1 coaching, supplementary curriculum topics, etc.
- There could be affiliate campaigns with 3rd parties, or partnerships with other learning organizations.
- The primary costs are engineering development and overhead to run the platform.
- **If the product can grow to 1,000s of users or even 1% of the addressable market, it will easily justify the investment to build.**
- **The potential for growth is likely much higher than this.**
- **This is a novel product which has very little direct competition.**

**Imagine a coding bootcamp experience
for less than \$500 accessible to anyone,
anywhere in the world, anytime.**

Vision

- **Short Term:** Break into the coding bootcamp education market.
- **Long Term:** Create a new learning platform for practical software skills.

1 Year OKRs

- Build and Launch
- ~10,000+ users
- ~100+ paid users

Roadmap

- **~1 week:** Landing page
- **~1 month:** Working prototype
- **~3 months:** Programming Fundamentals curriculum
- **~3-9 months:** Ship the full curriculum
- **1 year:** Platform has been launched
- **1 year+:** Profitable, growth, scaling, additional products/features

<https://prototype-x.netlify.com/>

Coding Bootcamps Reference, also see: <https://www.coursereport.com/reports/coding-bootcamp-market-size-research-2019>

App Academy	\$24,000.00	24 weeks
General Assembly	\$14,950.00	12 weeks
Springboard	\$8,500.00	36 weeks
Udacity	\$1,436.00	16 weeks
Bloc	\$8,500	32 weeks
Thinkful	\$9,500-\$16,000	20-24 weeks
Coding Dojo	\$12,995	14 weeks
Flatiron School	\$12,000	40 weeks
Hack Reactor	\$17,980	12 weeks
The Tech Academy	\$11,700	26 weeks
Codesmith	\$17,700	12 weeks
Actualize	\$13,900	12 weeks
Brainstation	\$14,000	12 weeks

Lambda School	% of salary	6+ months
Epicodus	\$7,800	27 weeks
Fullstack Academy	\$17,910	17 weeks
The Software Guild	\$13,750	12 weeks
Learning Fuze	\$12,305	12 weeks
CareerFoundry	\$5,500	24 weeks
Galvanize	\$17,980	12 weeks
Altcademy	\$880	40 weeks
Coding Temple	\$11,995	10 weeks
Dev Mountain	\$11,900	12 weeks
HyperionDev	\$3,555	24 weeks
Nucamp	\$1,620	22 weeks
V School	\$14,900	12 weeks
Helio Training	\$9,750	26 weeks
Coding Nomads	\$6,500	16 weeks
WOZ U	\$13,200	33 weeks
Byte Academy	\$12,950	14 weeks
Austin Coding Academy	\$2,990	10 weeks

Online Learning Resources Reference:

Product	Cost	Userbase	Type
Online Learning Platform			
Codecademy	\$15.99/mo	25+ million	Challenges + Lessons
freeCodeCamp	Free	millions	Challenges + Projects
Coursera	\$30-100/course	33+ million	Video Content
edX	\$50-300/course	14+ million	Video Content
Codewars	Free?	???	Code Challenges
GA Dash	Free	???	Project Based
Khan Academy	Free	100+ million	Video Lessons
MIT OpenCourseware	Free	65+ million	University Lectures
The Odin Project	Free	thousands	Guided Curriculum + Projects
Udacity	\$699/4 months	millions	Nanodegree Courses
SoloLearn	Free?	30+ million	Mobile Only Lessons + Quizzes
Bento .io	Free?	hundreds of thousands	Videos and Guides
Udemy	\$10+/course	30+ million	Video Content
Code .org	\$25/month	21+ million	Coding Courses
Scotch .io	Free	tens of thousands	Blogs and Articles
W3Schools	Free	50+ million monthly visits	Guides and Articles
Coderbyte	\$35/month	???	Programming and Interview Challenges
Brilliant .org	\$20/month	millions	Topic based courses
Skillcrush	\$500/course	17,000+	Web development courses
Tuts+	\$16.50/month	???	Tutorial Lessons