



How to Spark Your Journey into Cybersecurity as a Software Engineer

Aditi Chaudhry
Madelyn Torres

07.16.2021

Resources

- View Our Slides & Resources:
<https://tinyurl.com/amtdi2021>
- Connect With Us on Twitter!
@aditichaudhry92
@metorres20



Overview

1. Introductions
2. A Day in Our Lives
3. How We Transitioned to Security
4. Which of our SWE Skills Transferred
5. Q&A

Important Legal Information

This document is being distributed for informational and educational purposes only and is not an offer to sell or the solicitation of an offer to buy any securities or other instruments. The information contained herein is not intended to provide, and should not be relied upon for, investment advice. The views expressed herein are not necessarily the views of Two Sigma Investments, LP or any of its affiliates (collectively, “Two Sigma”). Such views reflect the assumptions of the author(s) of the document and are subject to change without notice. The document may employ data derived from third-party sources. No representation is made by Two Sigma as to the accuracy of such information and the use of such information in no way implies an endorsement of the source of such information or its validity.

The copyrights and/or trademarks in some of the images, logos or other material used herein may be owned by entities other than Two Sigma. If so, such copyrights and/or trademarks are most likely owned by the entity that created the material and are used purely for identification and comment as fair use under international copyright and/or trademark laws. Use of such image, copyright or trademark does not imply any association with such organization (or endorsement of such organization) by Two Sigma, nor vice versa

Overview

1. Introductions
2. A Day in Our Lives
3. How We Transitioned to Security
4. Which of our SWE Skills Transferred
5. Q&A

Introductions



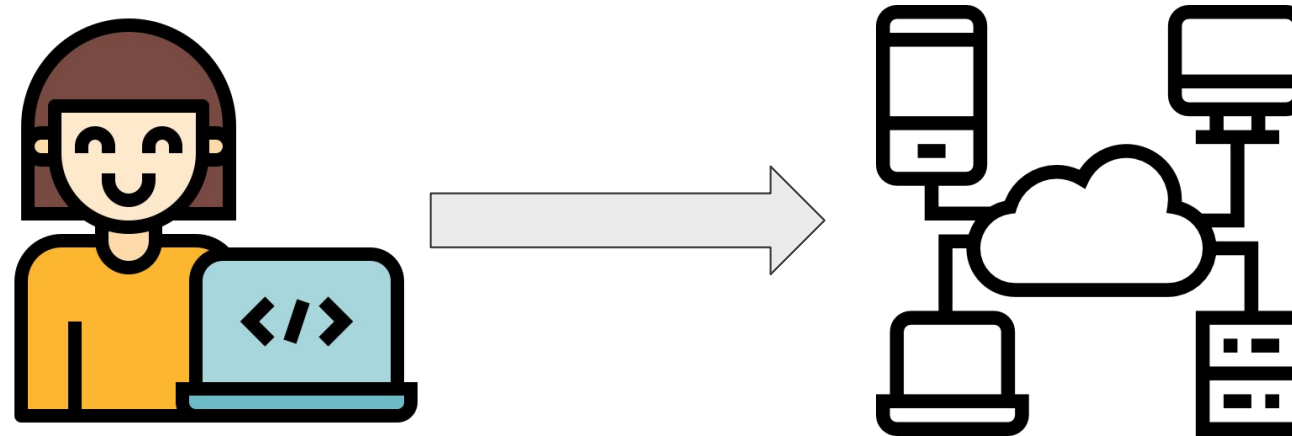
Introductions



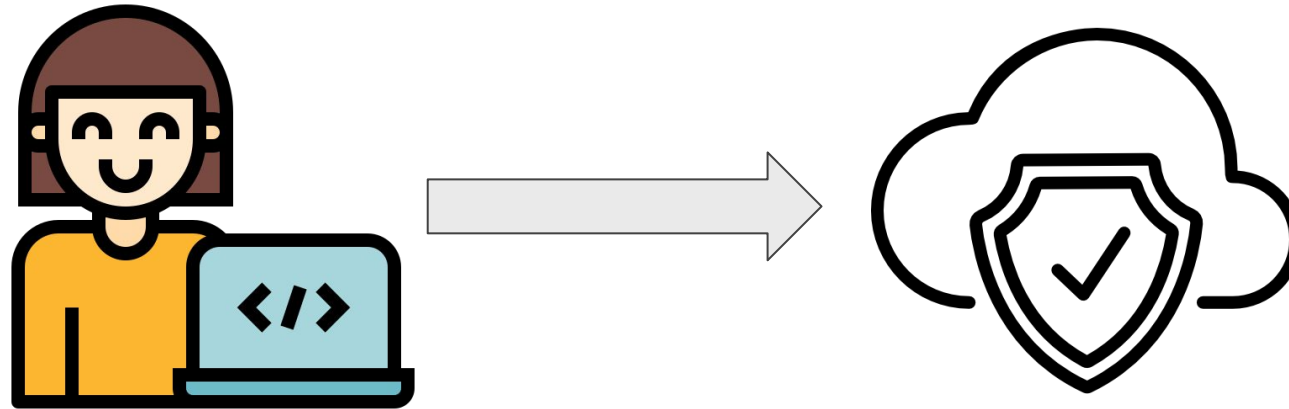
Overview

1. Introductions
- 2. A Day in Our Lives**
3. How We Transitioned to Security
4. Which of our SWE Skills Transferred
5. Q&A

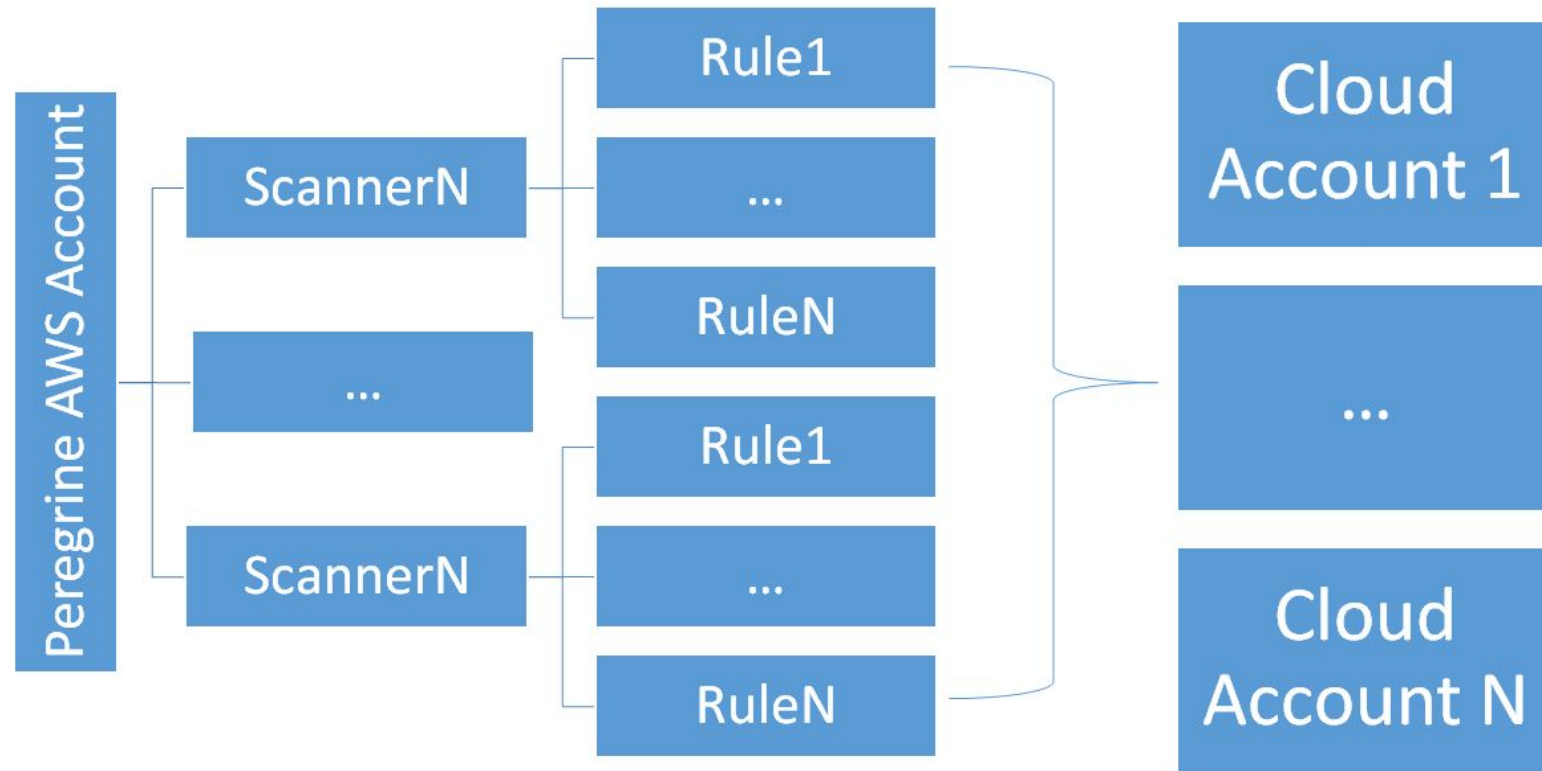
Cloud Security at Two Sigma



Cloud Security at Two Sigma

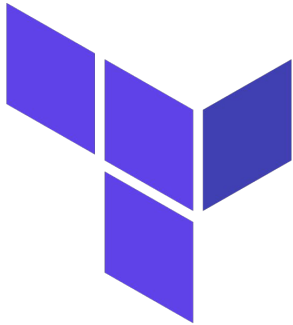


Cloud Security at Two Sigma



Cloud Security at Two Sigma

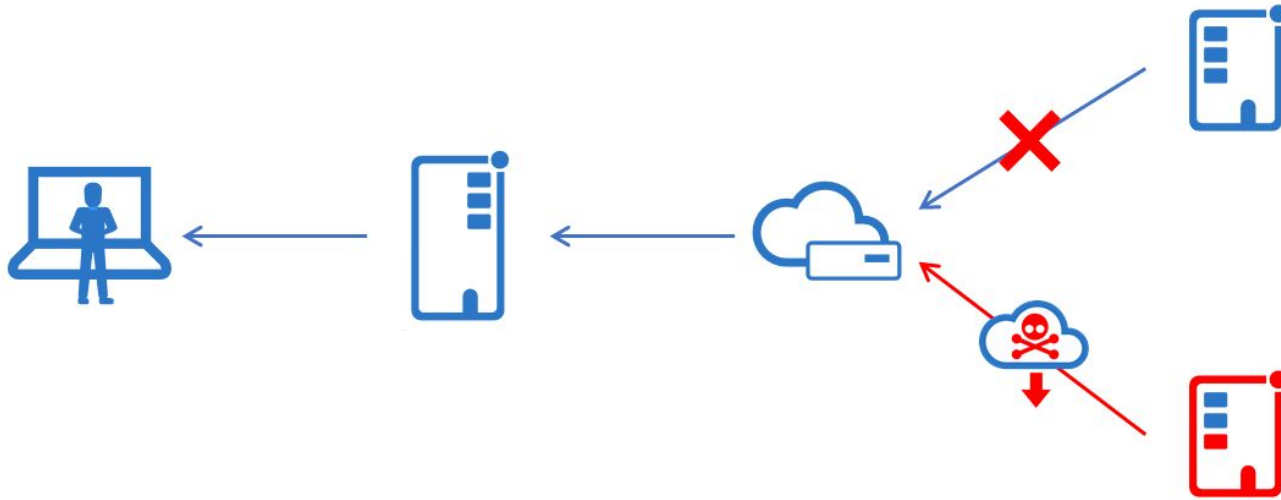
Languages:



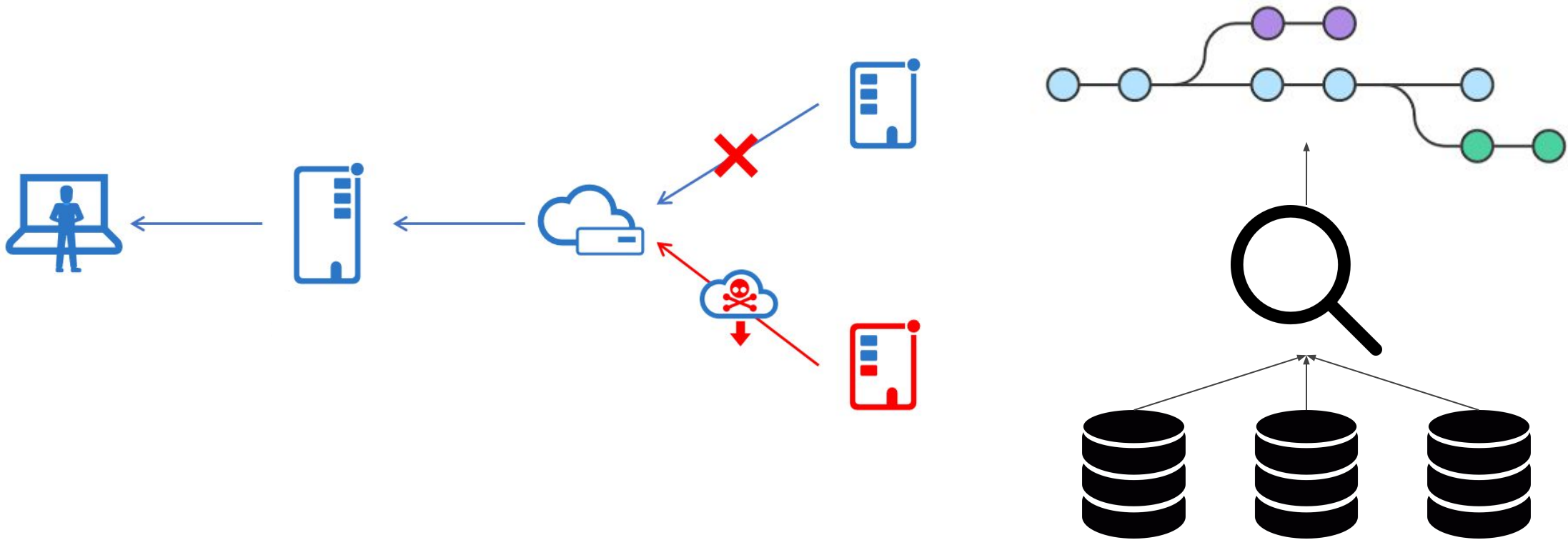
Technologies:



Application Security at Two Sigma



Application Security at Two Sigma



Application Security at Two Sigma

Languages:



Technologies:

 SMARTBEAR
Collaborator



Flask

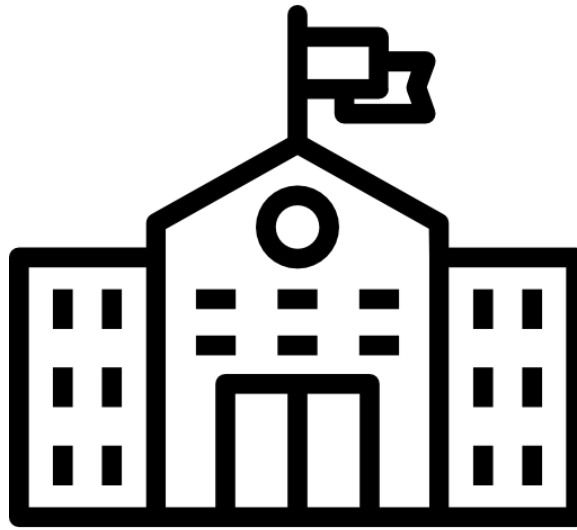
Overview

1. Introductions
2. A Day in Our Lives
- 3. How We Transitioned to Security**
4. Which of our SWE Skills Transferred
5. Q&A

Challenges in Transitioning Careers

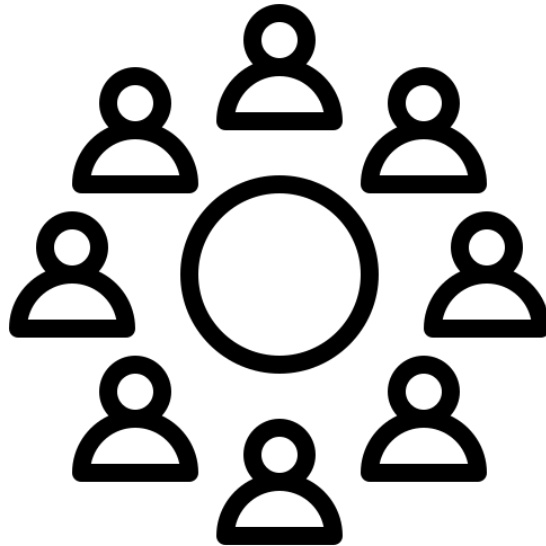
What barriers did we run into?

Challenges in Transitioning Careers



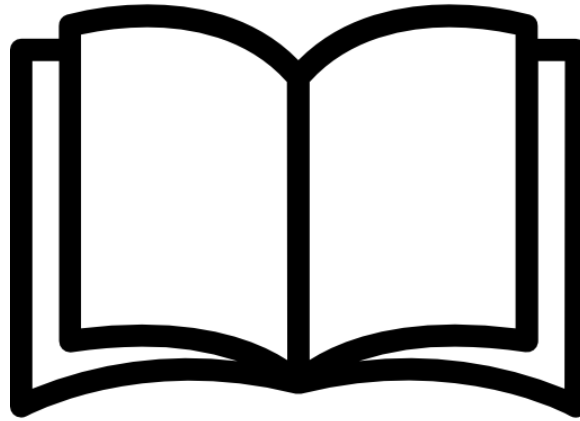
Few
Undergraduate
Security Classes

Challenges in Transitioning Careers



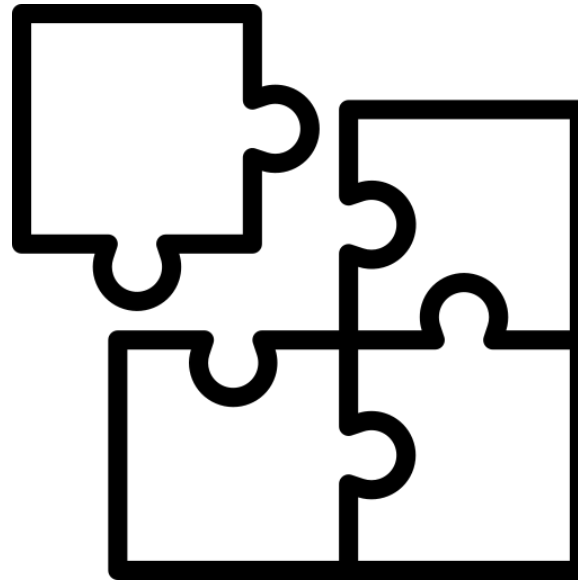
Minimal
Networking
Opportunities

Challenges in Transitioning Careers



Non-Obvious
Educational
Resources

Challenges in Transitioning Careers

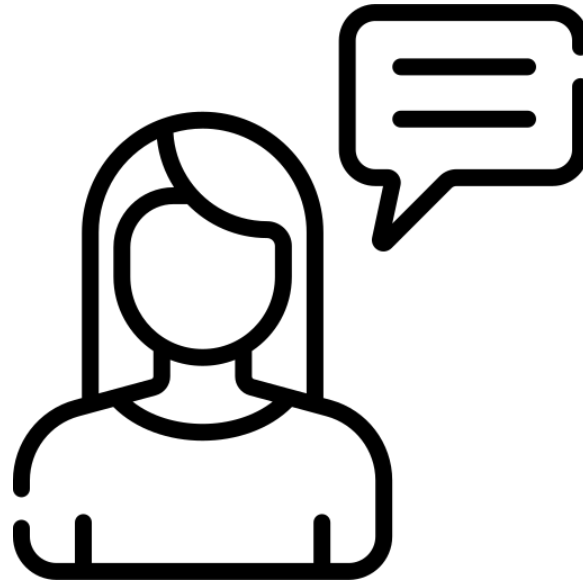


Intimidating
Image

Challenges in Transitioning Careers

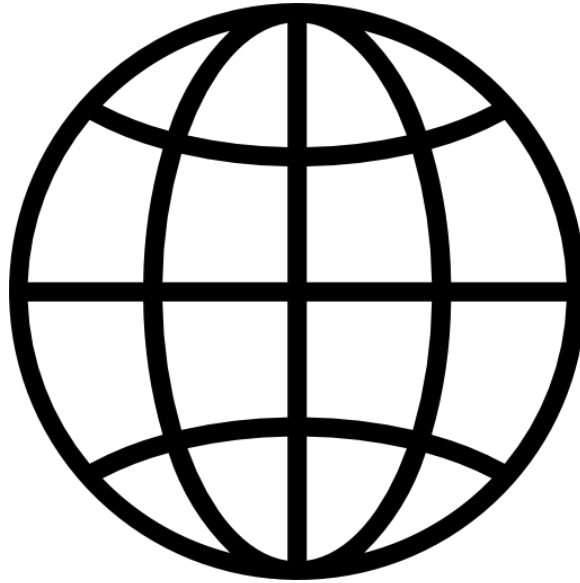
**What were our
solutions?**

Challenges in Transitioning Careers



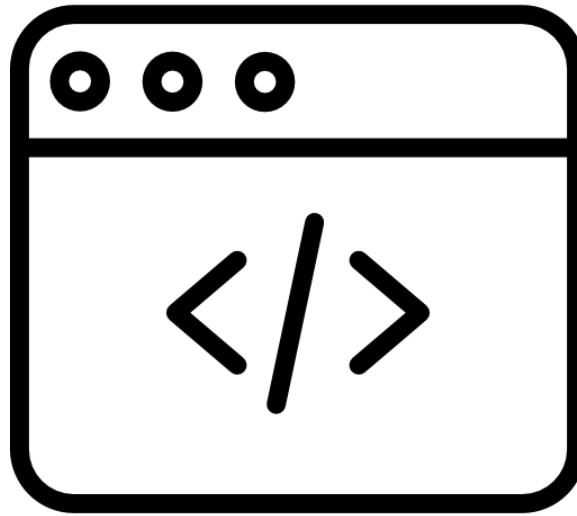
Reach Out to
Security
Professionals

Challenges in Transitioning Careers



Self Learning

Challenges in Transitioning Careers



Programming!

Challenges in Transitioning Careers

What did we learn?

Overview

1. Introductions
2. A Day in Our Lives
3. How We Transitioned to Security
- 4. Which of our SWE Skills Transferred**
5. Q&A

SWE Skill Transferability

**What skills are useful
in security?**

SWE Skill Transferability

What skills are useful in security?



attention
to detail

SWE Skill Transferability

What skills are useful in security?



attention
to detail



curiosity

SWE Skill Transferability

What skills are useful in security?



attention
to detail



curiosity



team
work

SWE Skill Transferability

What skills are useful in security?



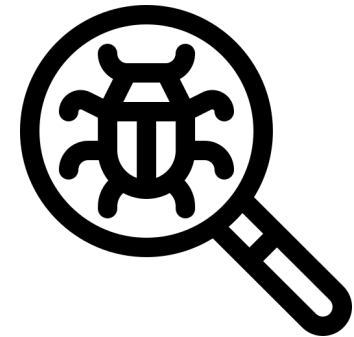
attention
to detail



curiosity



team
work

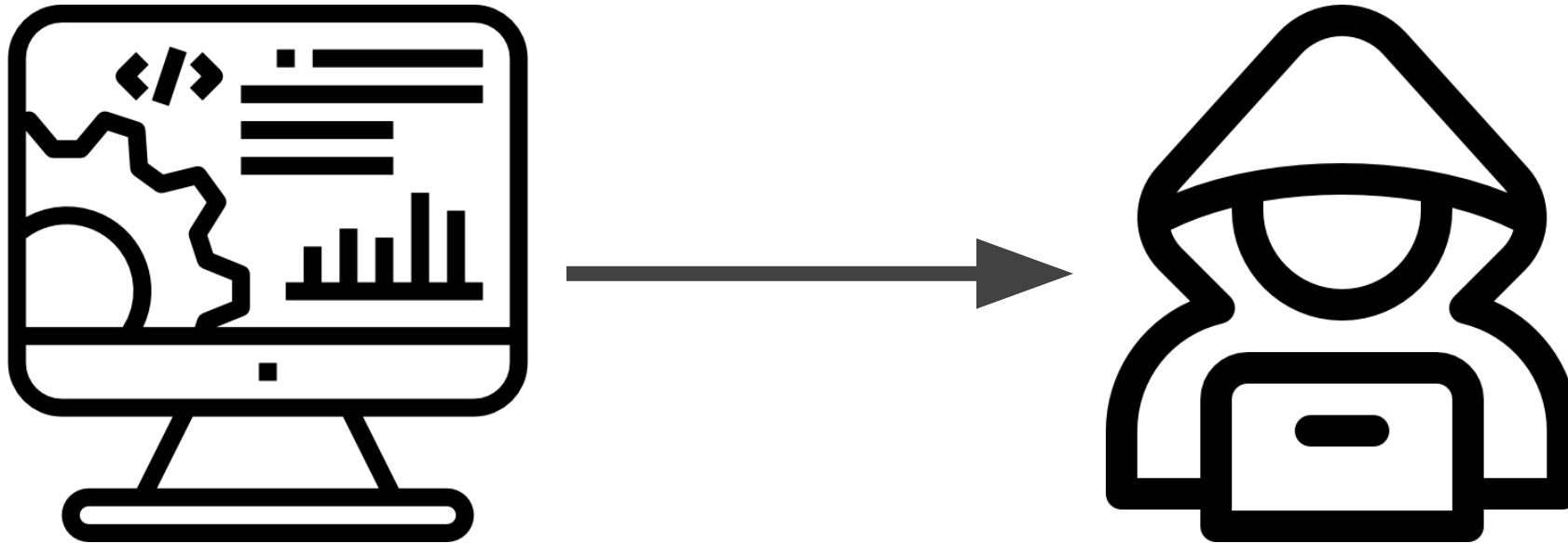


debugging

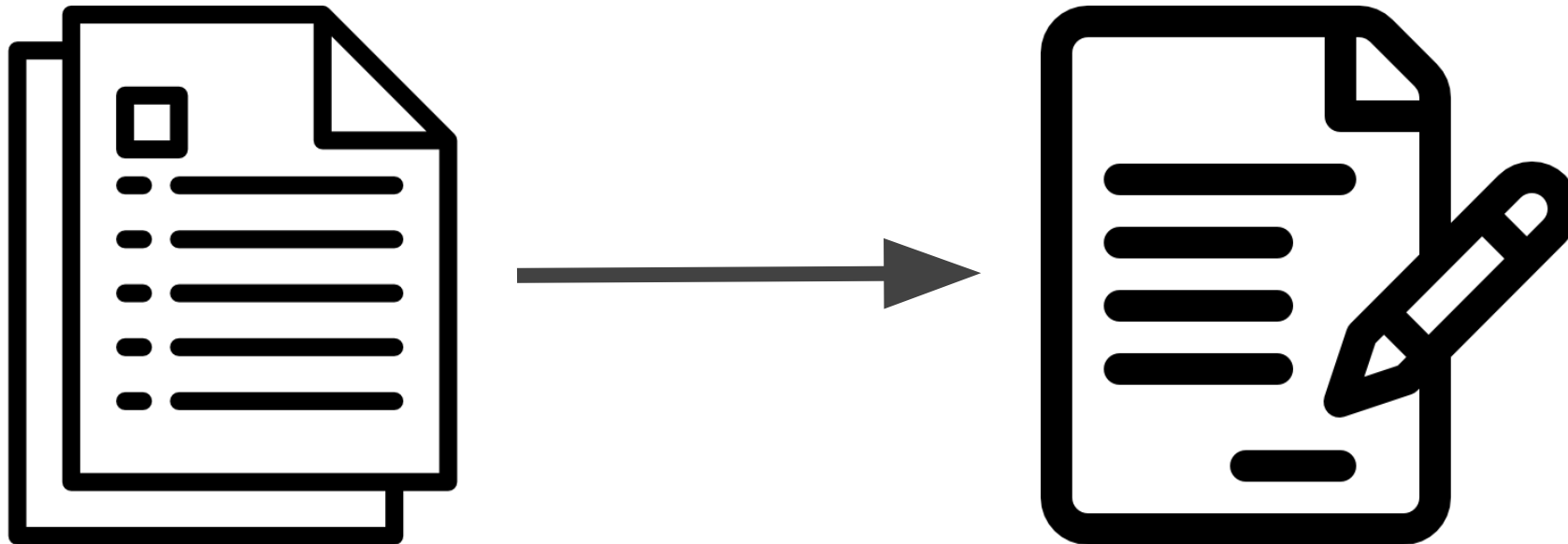
SWE Skill Transferability

Examples

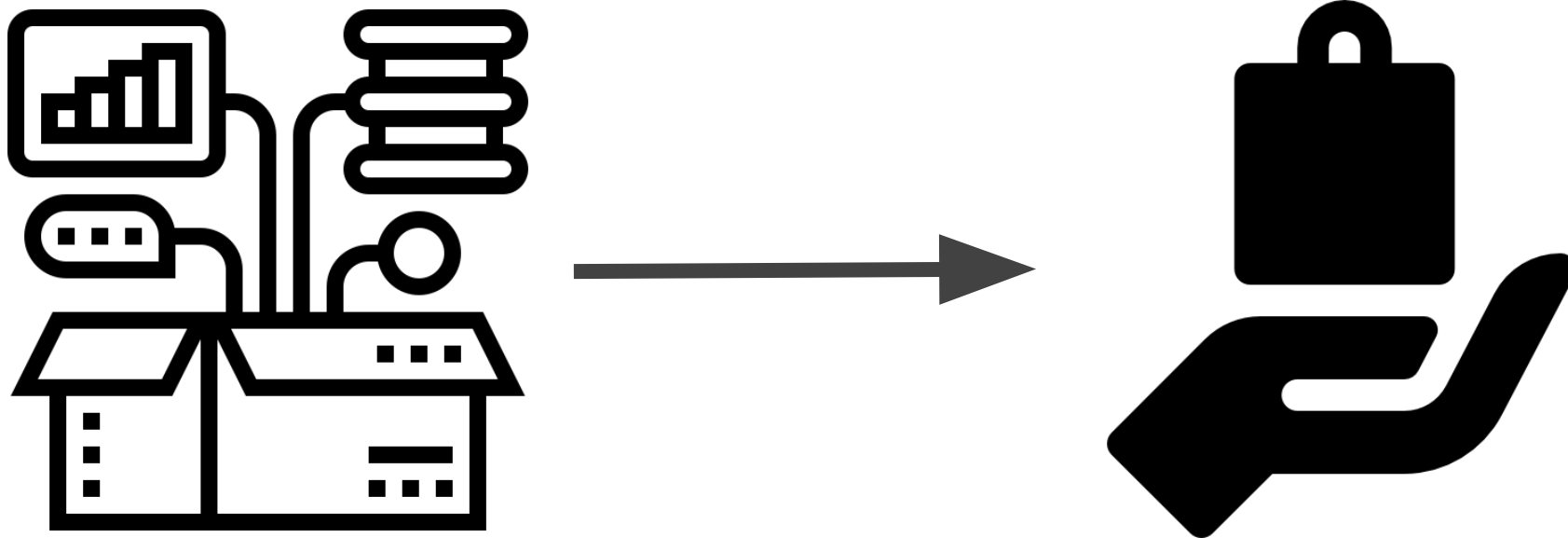
SWE Skill Transferability



SWE Skill Transferability



SWE Skill Transferability



Conclusion



- connect & engage w/5 people
- TDI CTF
- subscribe to a newsletter/blogpost

Questions?



Career Links

- [SWE Intern @ TS](#)
- [New Grad SWE @ TS](#)
- [General Experienced SWE @ TS](#)

Resources

- Projects
 - Hackathons
 - [Major League Hacking](#) (you can browse events here)
 - Many universities host them annually
 - Smaller hack days/hackathons at companies are also common
 - [Eventbrite](#) may also have some events listed
 - School Projects
 - Can intersect with most areas, for example (very very small subset of ideas):
 - Machine Learning - anomaly detection, intrusion detection, filtering, etc.
 - Distributed Systems - anonymity networks, reputation server, etc.
 - Databases - secure database practices, technologies, etc.
 - Personal Projects
 - Similar to school projects, except can be broader in scope
 - TONS of ideas out there if you search for them; creating security tooling can be pretty fun (and many, many tools are FOSS so you can contribute to them)

Resources

- Hands-on Experiences
 - Capture the Flags (CTFs)
 - <https://ctftime.org/> - general hub of CTFs as well as tracking team points
 - <https://ctfs.github.io/resources/> - decent place to start reading
 - <https://picoctf.org/resources> - resources from a beginner friendly CTF
 - The Diana Initiative is hosting one!
 - Bug Bounties
 - <https://www.hackerone.com/> - a platform for finding/submitting bounties
 - <https://www.bugcrowd.com/> - another platform
 - <https://www.synack.com/> - yet another platform
 - Many companies have bug bounty programs -- you can definitely look into which ones have programs and work from there (avoid asking for compensation when there is no formal program; these are known as “beg bounties” and are frowned upon)

Resources

- Hands-on Experiences (cont.)
 - Home Labs
 - <https://owasp.org/www-project-webgoat/> - locally hosted application that you can pentest
 - <https://dvwa.co.uk> - similar to above
 - Web Guides/Challenges
 - <https://cryptopals.com/> - fun website for doing crypto challenges
 - <https://guyinatuxedo.github.io/> - good for learning reverse engineering
 - [OWASP Web Goat](#)
 - [Cloud Goat](#)
 - Certifications
 - <https://pauljerimy.com/security-certification-roadmap/> - roadmap of many certs
 - Many different areas to start in/look at depending on interests
 - CompTIA Security+ (and tangentially Network+) tends to be a pretty good start

Resources

- Networking Opportunities
 - Conferences
 - Security specific
 - [The Diana Initiative](#), [WiCyS](#)
 - [Black Hat](#), [DEFCON](#), [BSides](#), [Shmoocon](#)
 - [Hacker Maps](#)
 - General tech - [Grace Hopper Celebration](#)
 - Meetups
 - <https://meetup.org/>
 - [OWASP Devslop Project](#), [OWASP WIA](#)
 - [Empire Hacking](#)
 - Professional Security Organizations
 - [ISC2](#)
 - [SANS](#)

Resources

- Social Media
 - <https://www.linkedin.com/> - very obvious but worth mentioning, since it's the de facto professional social media platform
 - <https://twitter.com/> - very active usage among security professionals
 - MANY people to look into -- would recommend searching online for good accounts to follow for a more comprehensive list (or ask us for suggestions :))
- Educational Opportunities
 - Academic Classes
 - <https://ocw.mit.edu/> - shameless plug (6.858, Computer Systems Security, was my first security class!)
 - <https://www.edx.org/> - Harvard/MIT collaboration
 - [Coursera](#), [Udemy](#), [Pluralsight](#)
 - YouTube Videos
 - general learning - LiveOverflow, Hak5, The Cyber Mentor, etc.
 - (less educational, more fun) malware videos - danooct1, onNeutral, etc.
 - Workshops
 - <https://training.owasp.org/> - excellent workshops with excellent speakers

Resources

- Educational Opportunities
 - Books
 - <https://cybercanon.paloaltonetworks.com/>
 - [Hacking Exposed](#) - good intro books since they're very high level
 - [Bejtlich's Books](#) - another good place to start
 - [Hacking: The Art of Exploitation](#) - Very technical but good for learning tech principles on modern security issues
 - [Smashing the Stack](#) - not a book, but a historical post regarding overflows and general commentary on how to approach attacking systems via understanding
 - [Web Application Hacker Handbook](#) - outdated in parts but still relevant; foundational for web hacking in general
 - Ask us for more specific recommendations/more in general :)
 - Blogs
 - <https://krebsonsecurity.com/>, <https://www.thesecurityblogger.com/>, <https://tldrsec.com/>, <https://cloudseclist.com/>,
 - Podcasts
 - <https://securityweekly.com/shows/> - they also have a YouTube channel
 - <https://darknetdiaries.com/>

Resources

- Mentorship
 - [Engaging a Mentor w/a Short Term Project](#)
 - [How to Build a Great Relationship w/a Mentor](#)
 - [Demystifying Mentoring](#)
 - [3 Ways to Foster Mentorship](#)
- Forums
 - <https://www.reddit.com/r/blueteamsec/>
 - <https://www.reddit.com/r/netsec/>
 - <https://www.reddit.com/r/Malware/>
 - <https://www.reddit.com/r/homelab/>
 - <https://www.reddit.com/r/sysadmin/>

Overview

1. Introductions
2. What do we actually do?
3. Challenges in Transitioning Careers
4. SWE Skill Transferability
- 5. Development Areas (i.e. some paths into security)**
6. Q&A

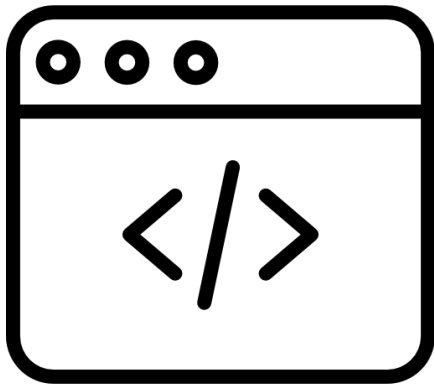


(some) Paths into Security

What else can an engineer do to enter security?

(some) Paths into Security

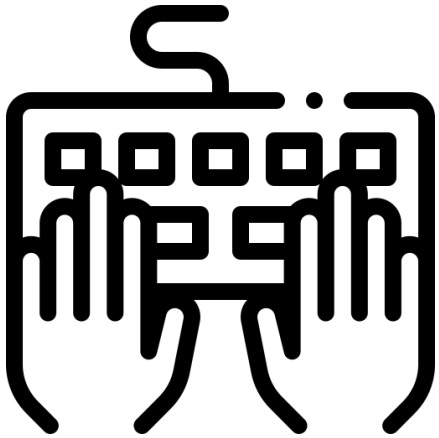
What else can an engineer do to enter security?



Hackathons
School Projects
Personal Projects

(some) Paths into Security

What else can an engineer do to enter security?



Capture the Flags (CTFs)

Bug bounties

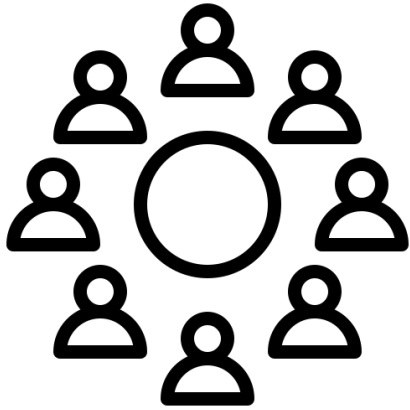
Fellowships

Home Labs

Certifications

(some) Paths into Security

What else can an engineer do to enter security?



Conferences
Meetups
Professional Security Organizations
Social Media

(some) Paths into Security

What else can an engineer do to enter security?



Academic classes
YouTube videos
Workshops
Books/Blogs/Podcasts

(some) Paths into Security

What else can an engineer do to enter security?

Mentorship



focus on professional development
get guidance, support, advice
skills-based mentoring