
AWS
re:Invent
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SEC307

Ship securely: Automated security testing for developers

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Agenda

Shift left – security overview

Automated security testing

Additional security tools and processes

Cultural aspects

Workshop

Takeaways

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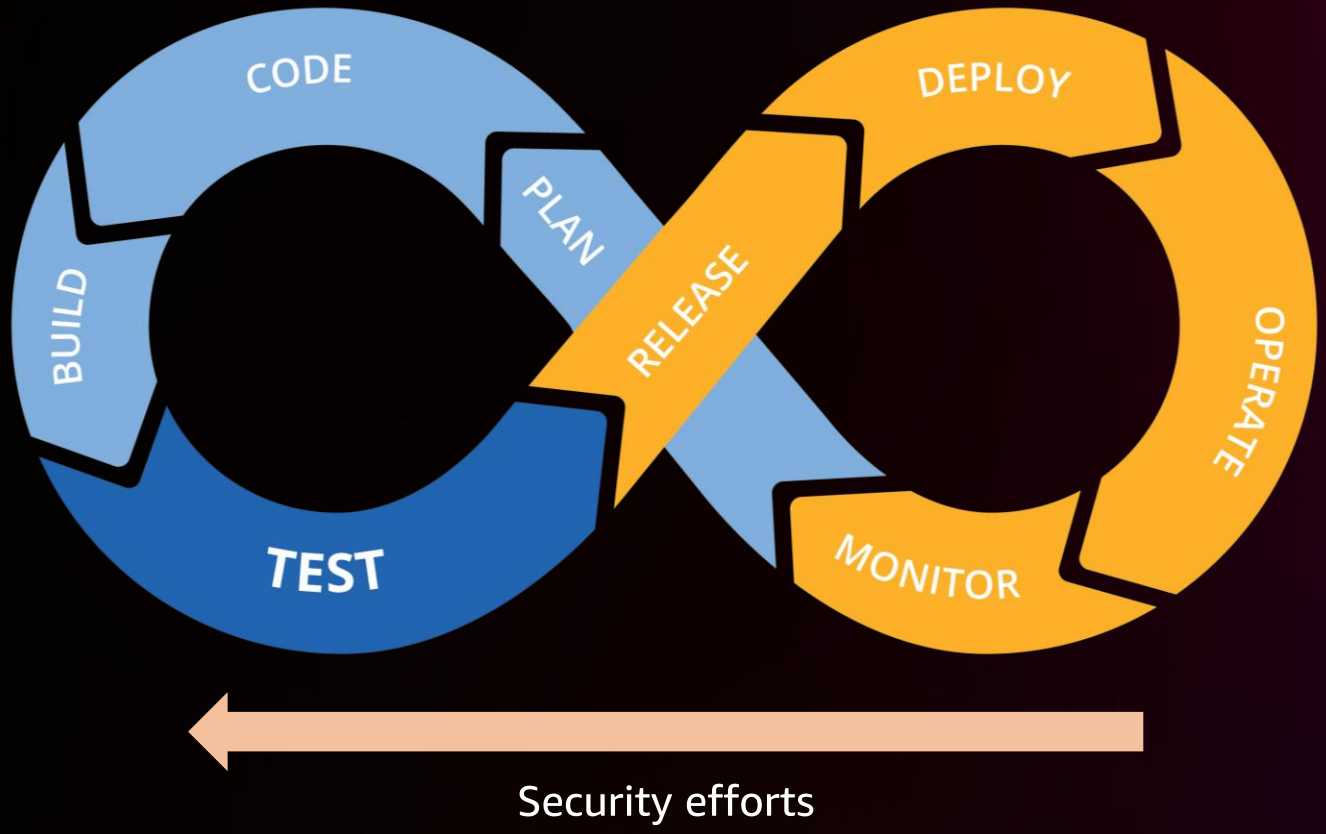
Shift left: Security

Move attention to security to the **earliest** possible point in the software development lifecycle



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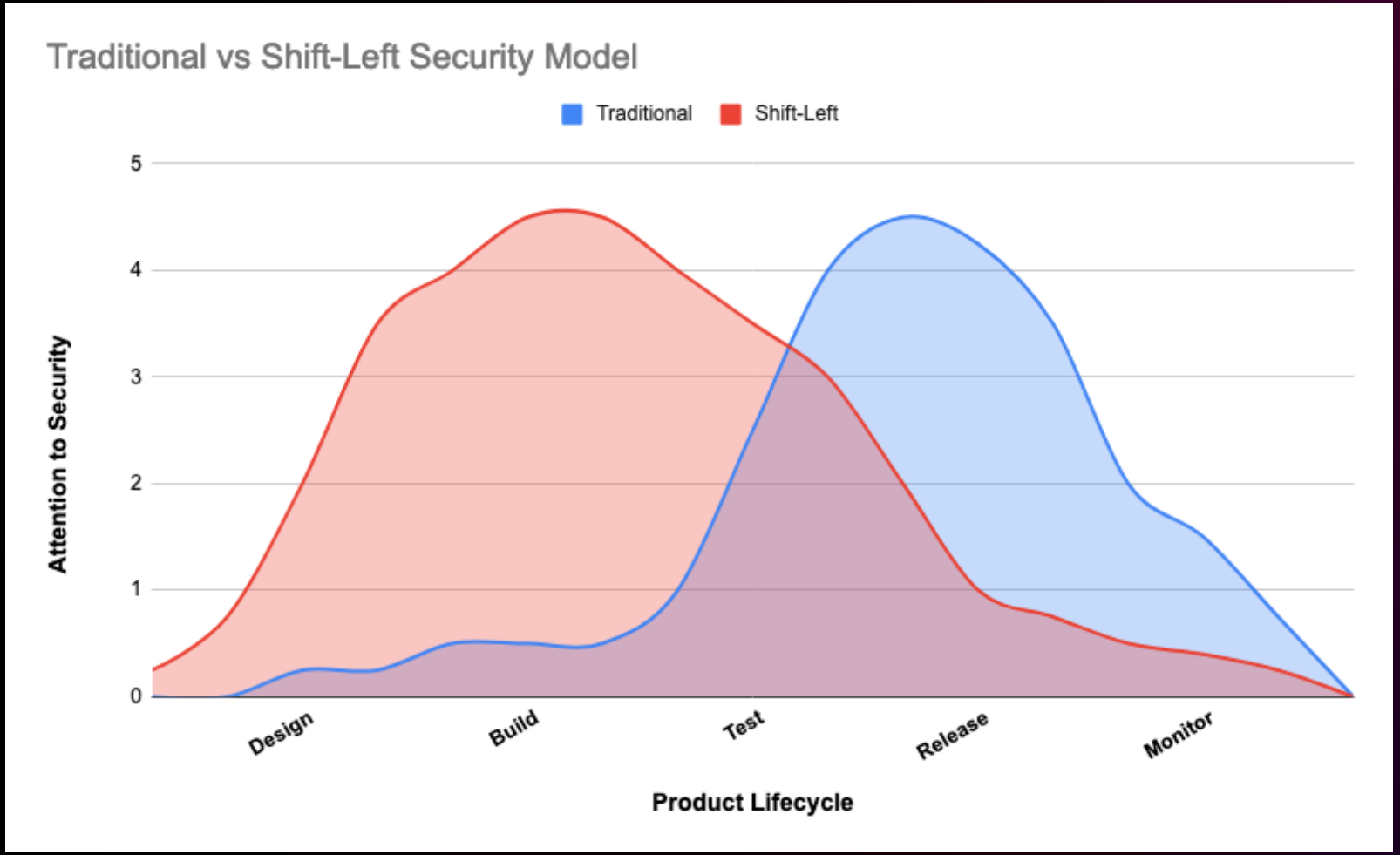
Attention to security



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Does this mean more work for developers?

Investment in order to sleep better

Cheaper to fix security issues earlier[1]

Faster time to market, less turnaround time

Most of it can be automated

[1] Error Cost Escalation through the Project Lifecycle – https://ntrs.nasa.gov/citations/20100036670

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Automated security testing

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Are we writing code securely?

STATIC APPLICATION SECURITY TESTING (SAST)

SAST tools catch bugs and vulnerabilities in your application, with thousands of automated static code analysis rules

Amazon CodeGuru

sonarqube

Checkmarx

snyk

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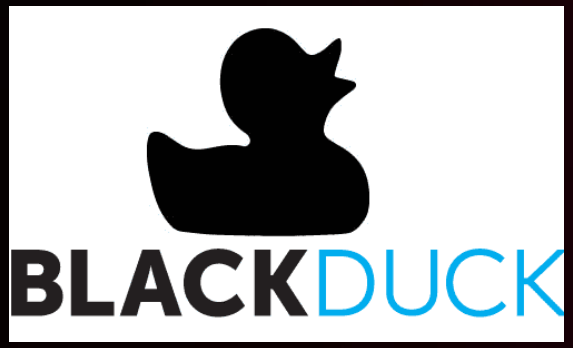
How about code written by others?

SOFTWARE COMPOSITION ANALYSIS (SCA)

Most modern applications are composed of code written by others[2]

SCA tools check your dependencies for any vulnerabilities using a known database



[2] Veracode State of Security Report – https://www.veracode.com/state-of-software-security-report

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Are we protecting our intellectual property?

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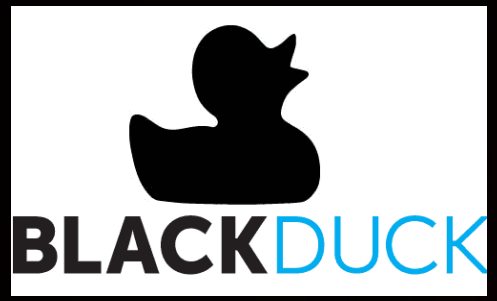

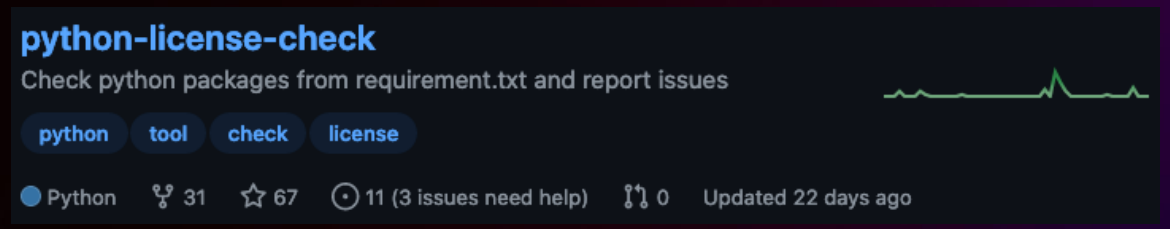

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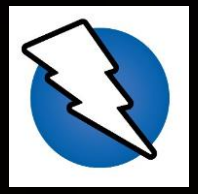
Are our security controls working?

DYNAMIC APPLICATION SECURITY TESTING (DAST)

DAST tests the security posture of your application during **runtime**

This is used in tandem with other AppSec tools in order to validate your security controls



OWASP ZAP

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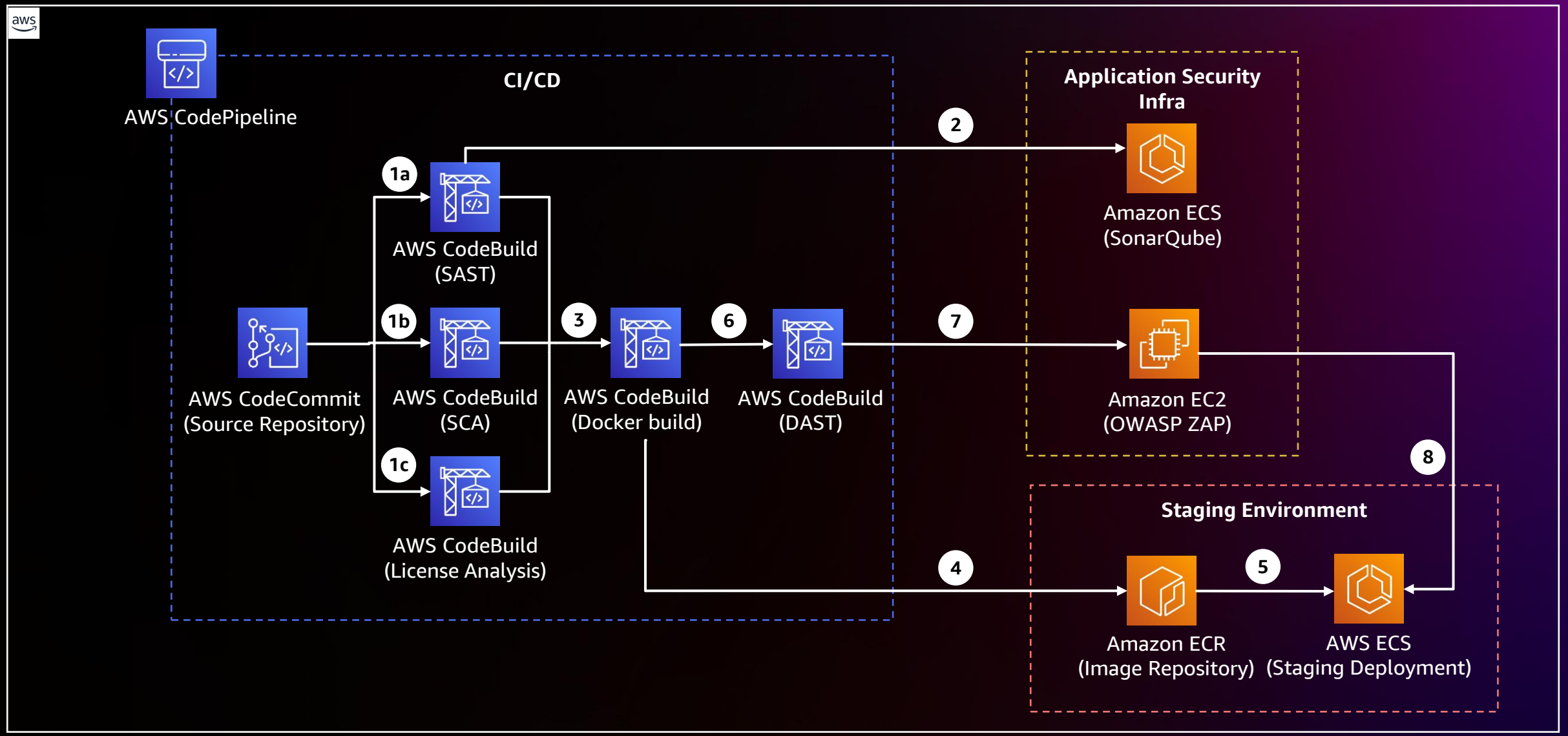
Automated security testing



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Additional security tools & processes

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Security before writing code

THREAT MODELING

Helps to identify **security requirements** prior to development[3,4]

Threat ID	Asset	Entry point	Attack summary	Technique
TR-01	User account	Login page	Being able to hijack someone's account and conduct malicious activities	Brute-force attacks, password dumps, session hijacking, phishing

Threat ID	Preventive/Corrective controls
TR-01	• Multi-factor authentication • Password lifecycle and rules • Secure generation of session IDs • Session lifecycle • Secure storage of session cookies • Regular security reminders to customers

[3] How to approach threat modeling – https://aws.amazon.com/blogs/security/how-to-approach-threat-modeling/
[4] Threat modeling the right way for builders – https://catalog.workshops.aws/threatmodel

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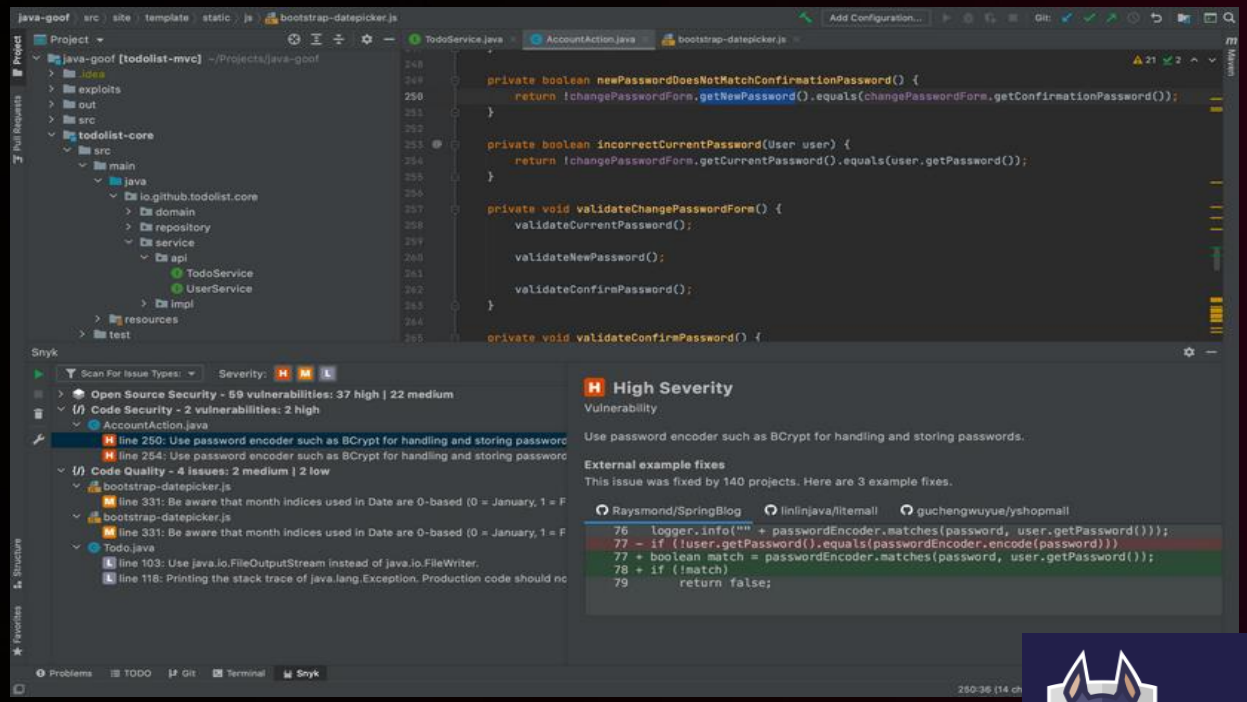
Security while writing code

IDE SECURITY EXTENSIONS

IDE extensions can provide quick and actionable security findings as you write your code



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Security in source control

GIT HOOKS

Using Git hooks (pre-commit) allows you to trigger security scans automatically on your codebase to prevent accidental leakage of sensitive info such as AWS credentials and SSH keys

Talisman

GitHound

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Security in configuration

SECRETS MANAGEMENT

Sensitive configurations such as database credentials are better stored somewhere else and accessed securely

AWS Secrets Manager

AWS Systems Manager

Parameter store

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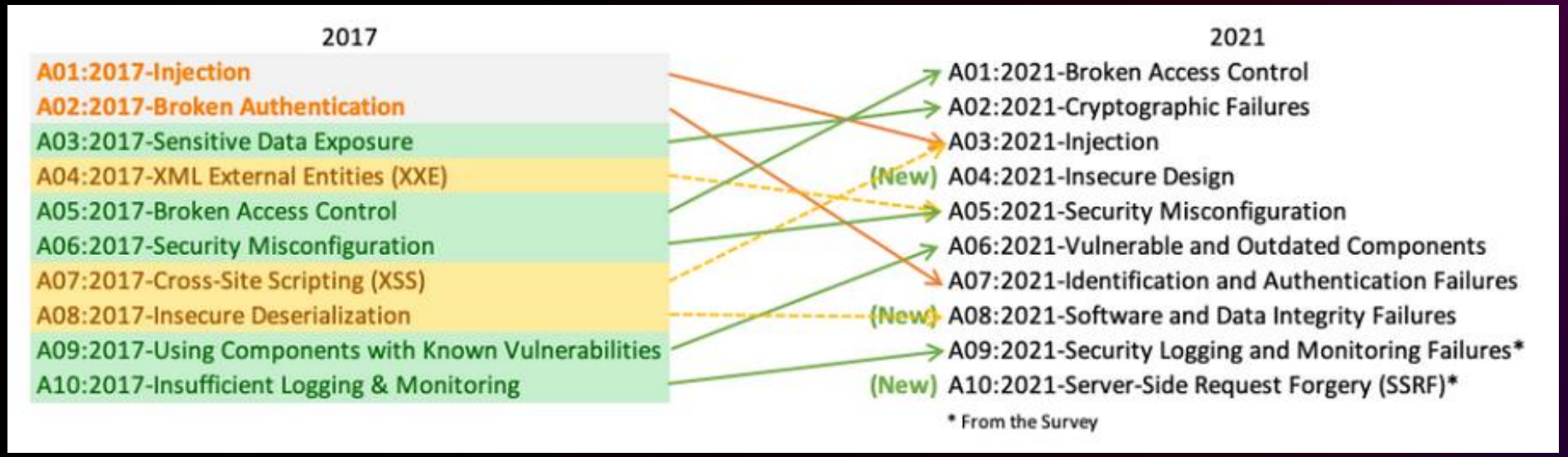
Be a better code reviewer

https://owasp.org/www-project-top-ten/



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Cultural aspects

- Automation alone will not solve the problems
- Share security knowledge across different teams
  - **Build allies** – identify security champions and setup a community of practice
  - Conduct regular security-centric lunch-and-learn sessions
- Focus on building an inclusive culture and avoid the “blame game”

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Let’s start building!

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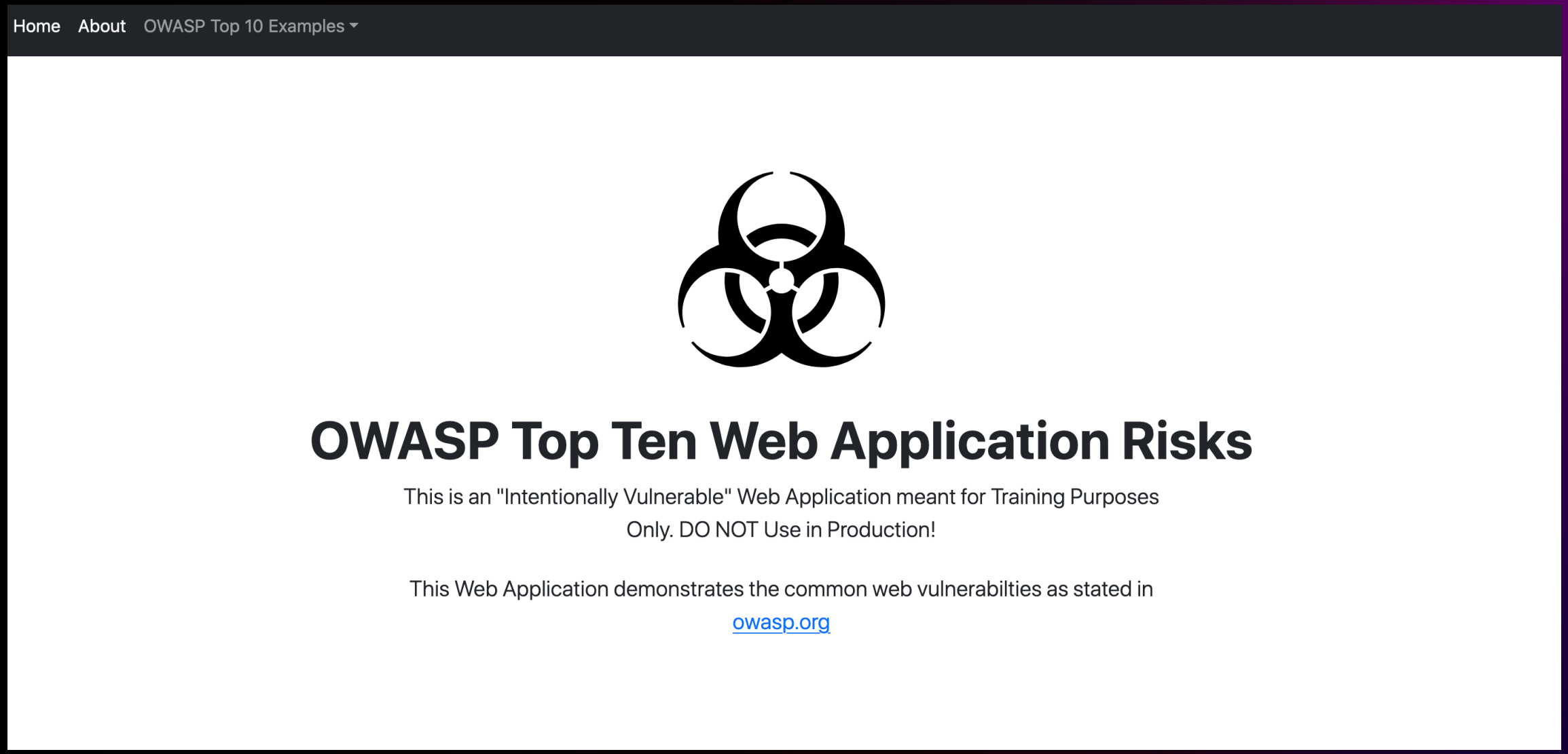
Exploit and remediate



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Getting started with this workshop

- As a participant, you will have access to an AWS account with any optional preprovisioned infrastructure and IAM policies needed to complete this workshop
- The AWS account will only be available for the duration of this workshop – you will lose access to the account thereafter
- The optional preprovisioned infrastructure will be deployed to a specific AWS Region. Check your workshop content to determine whether other Regions will be used.
- Be sure to review the terms and conditions of the event. Do not upload any personal or confidential information in the account.

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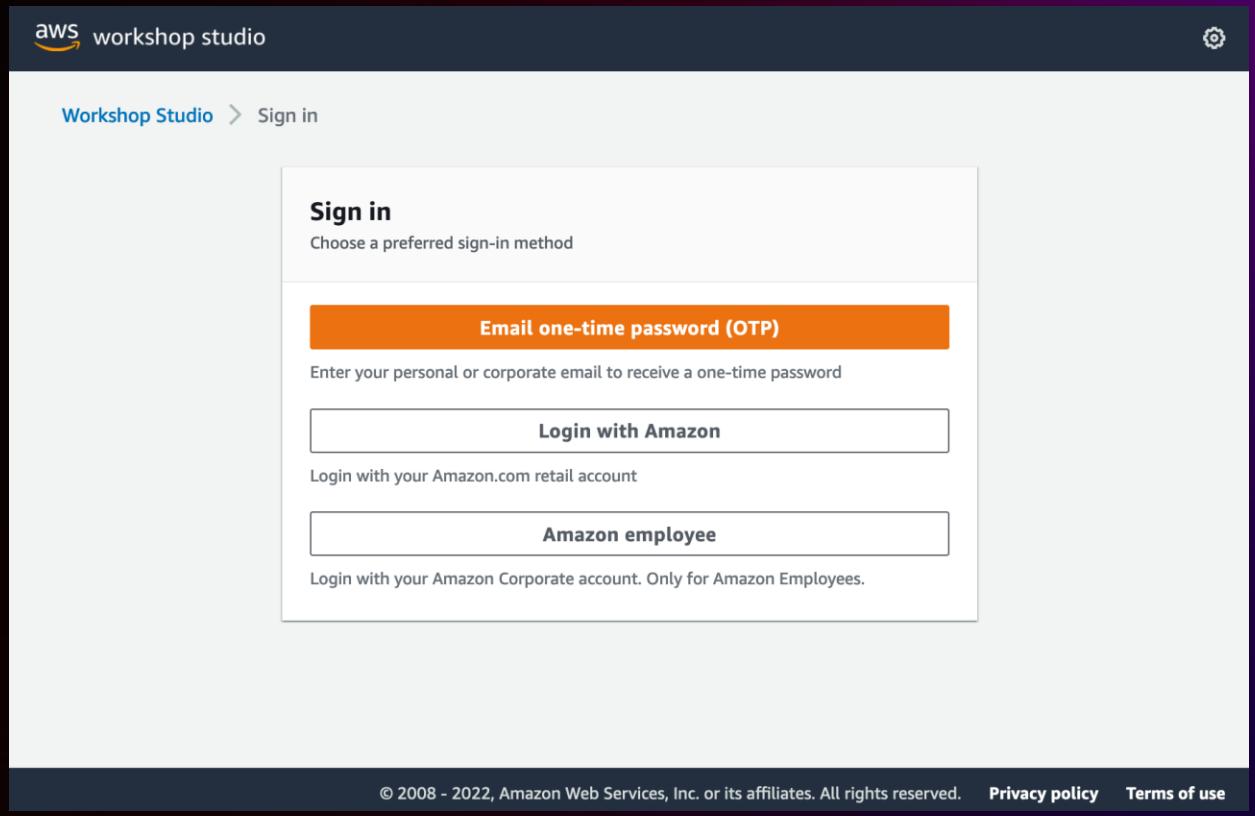
Step 1: Sign in via your preferred method

One-click join link: https://s12d.com/sec4devs



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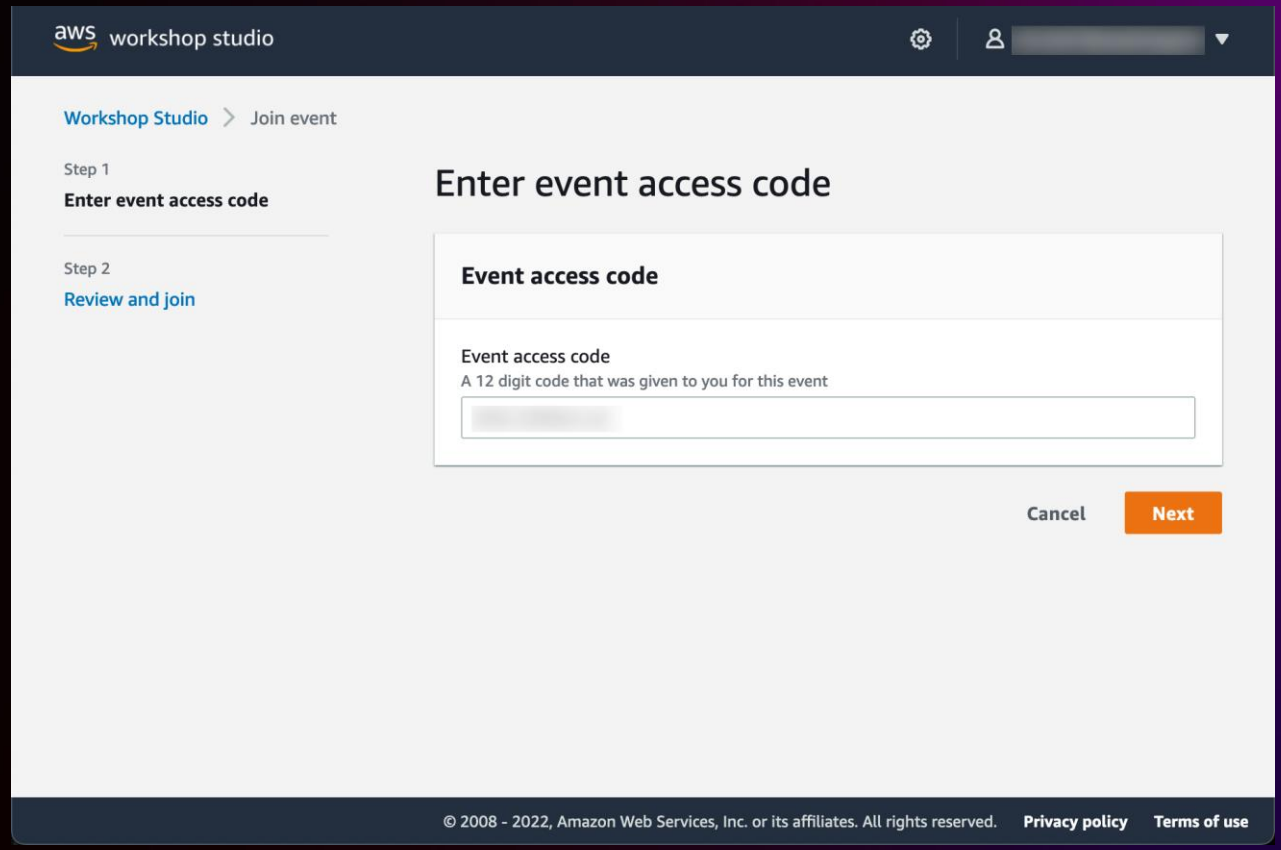
Step 2 (optional): Enter event access code

Enter 12-digit event access code:

6586-0e0893-16

If you were given a one-click join link, you can skip this step



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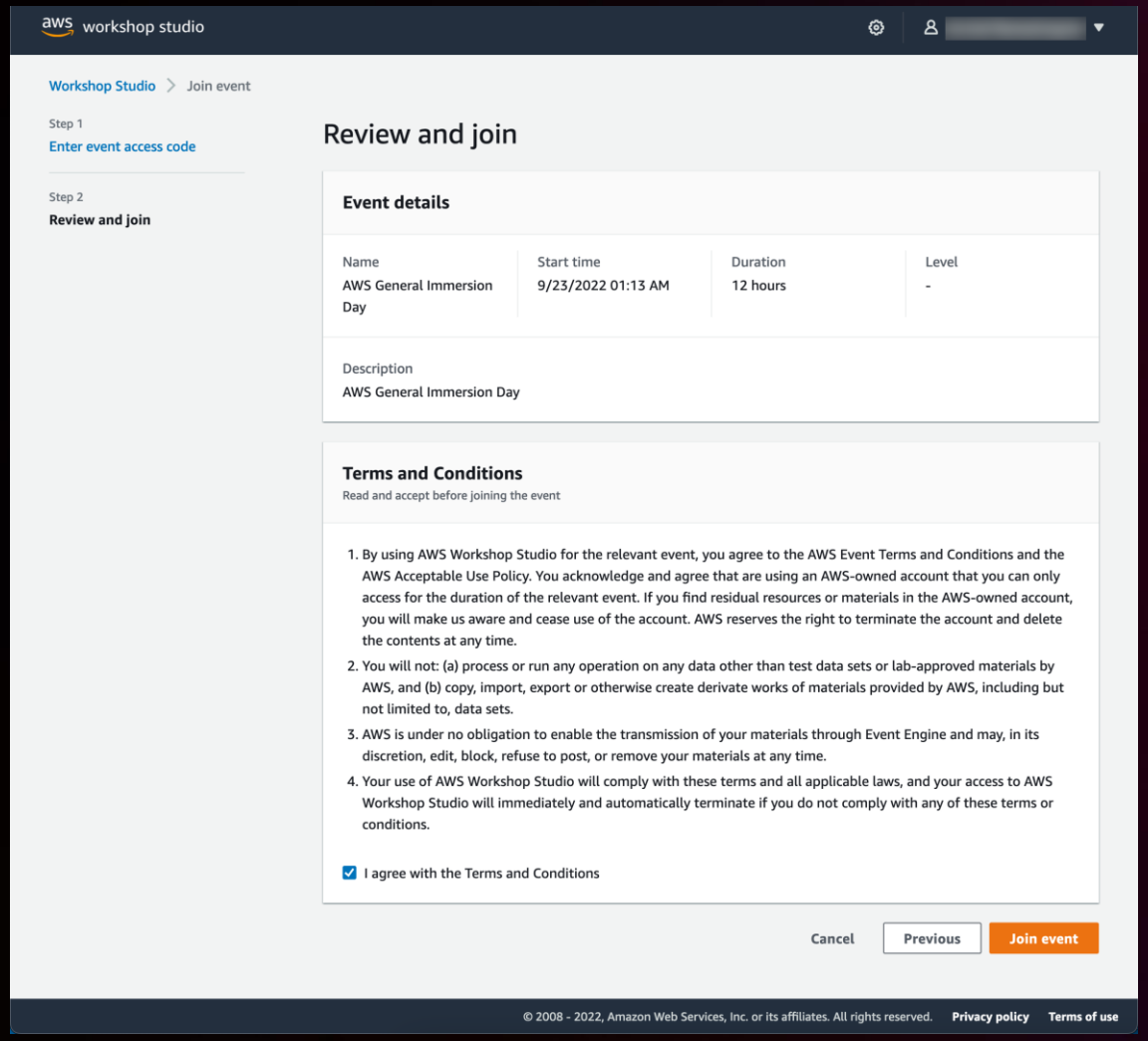
Step 3: Review terms and join event



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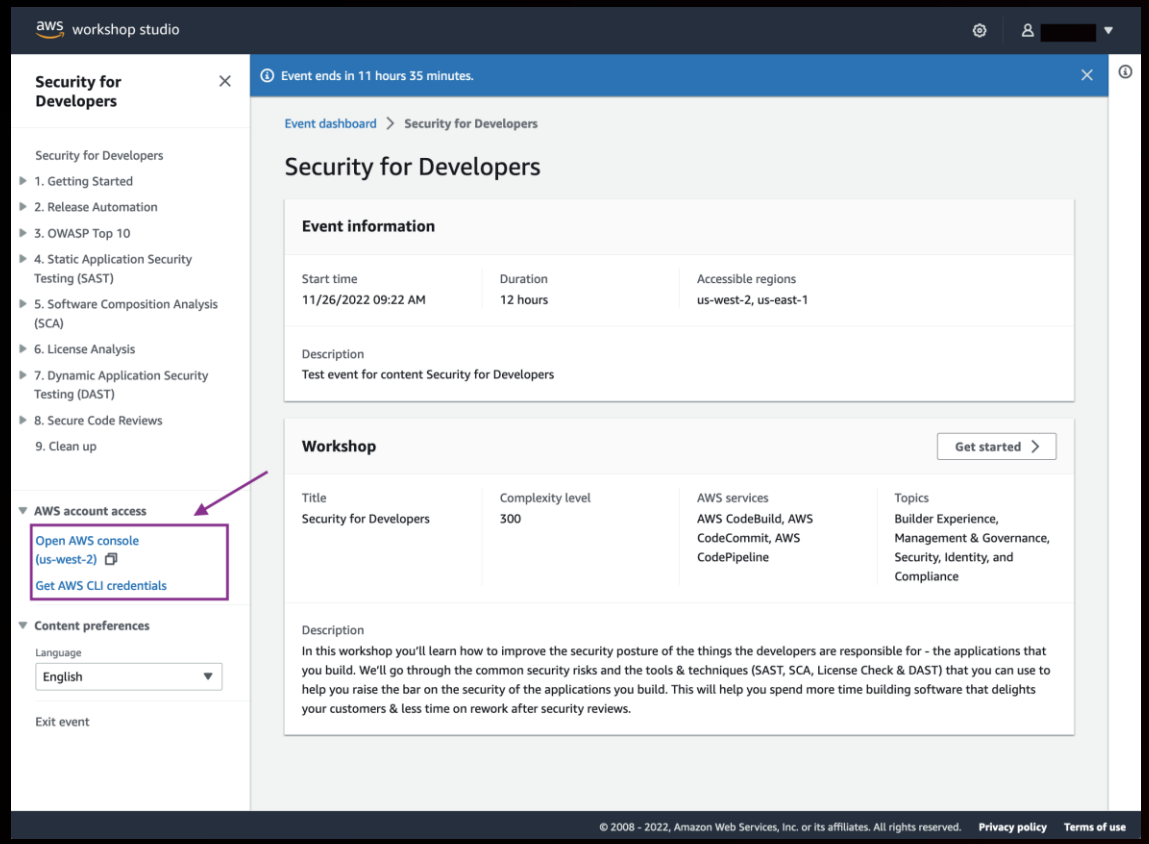
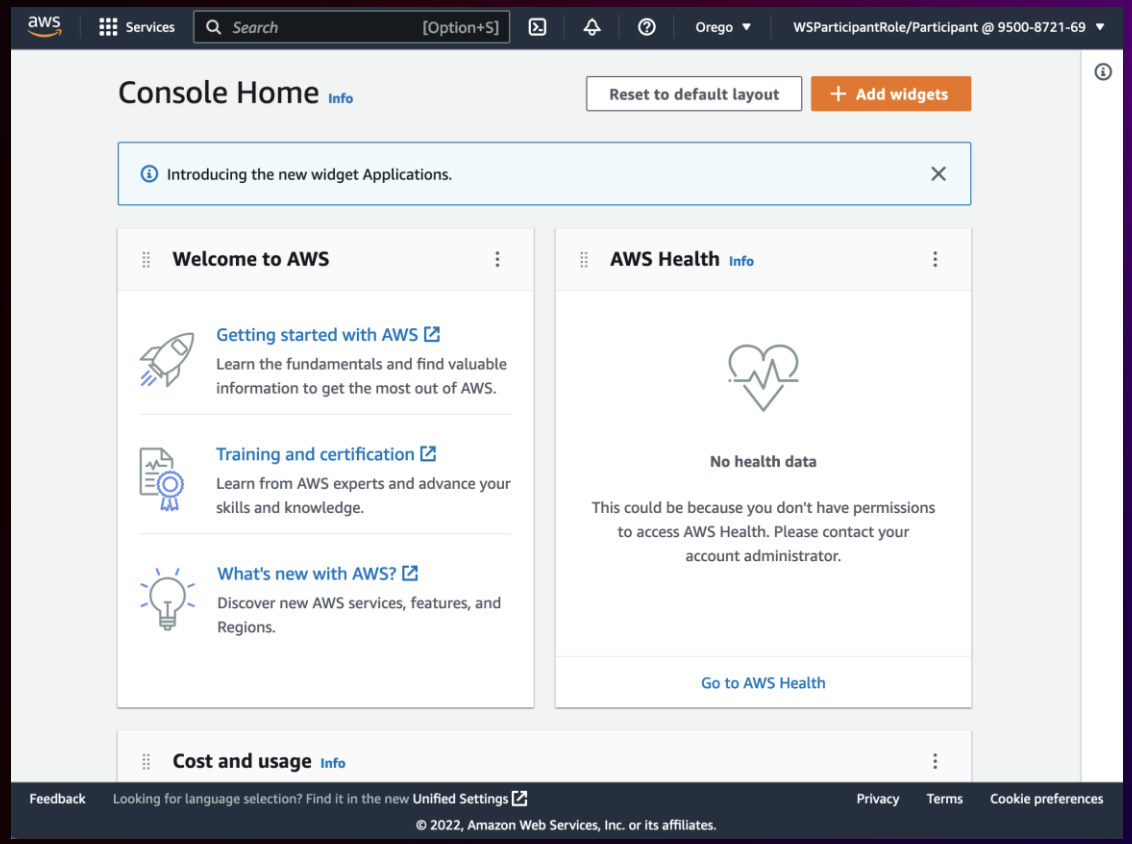
Step 4: Access AWS account

Access the AWS Management Console or generate AWS CLI credentials as needed





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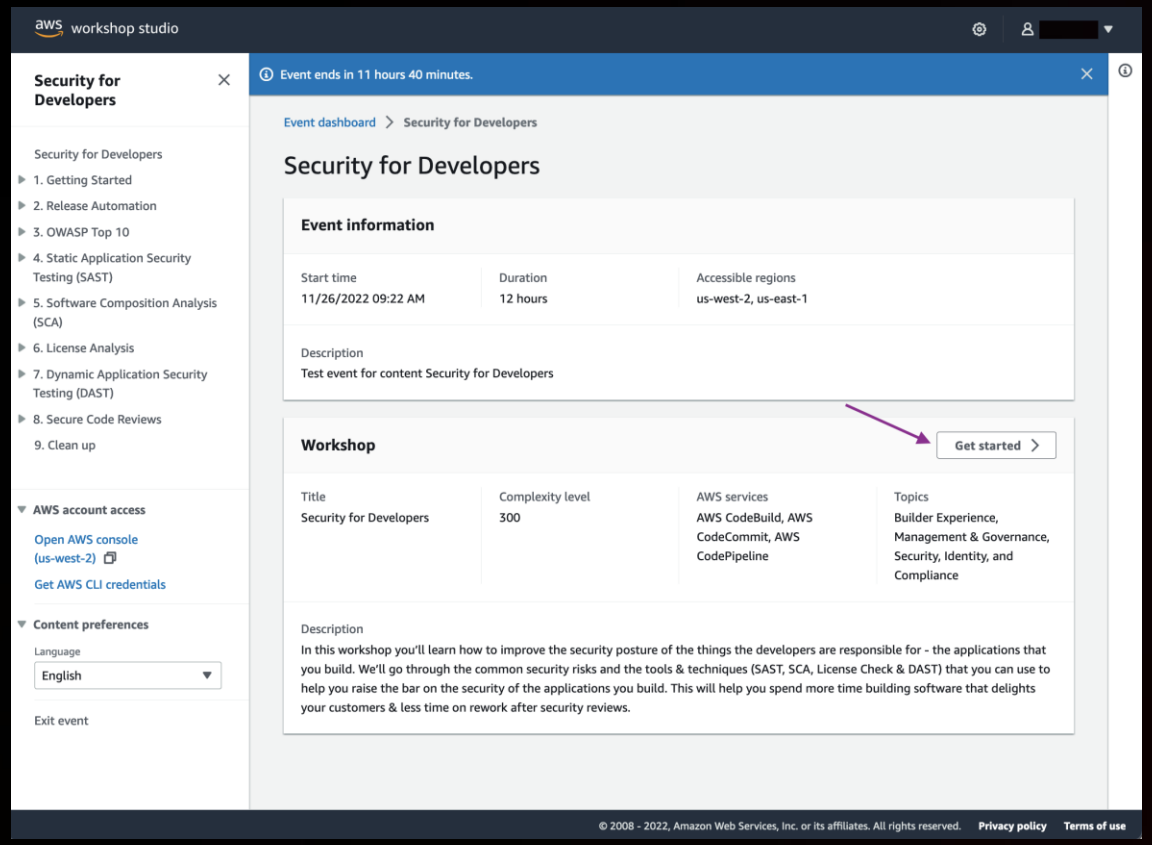
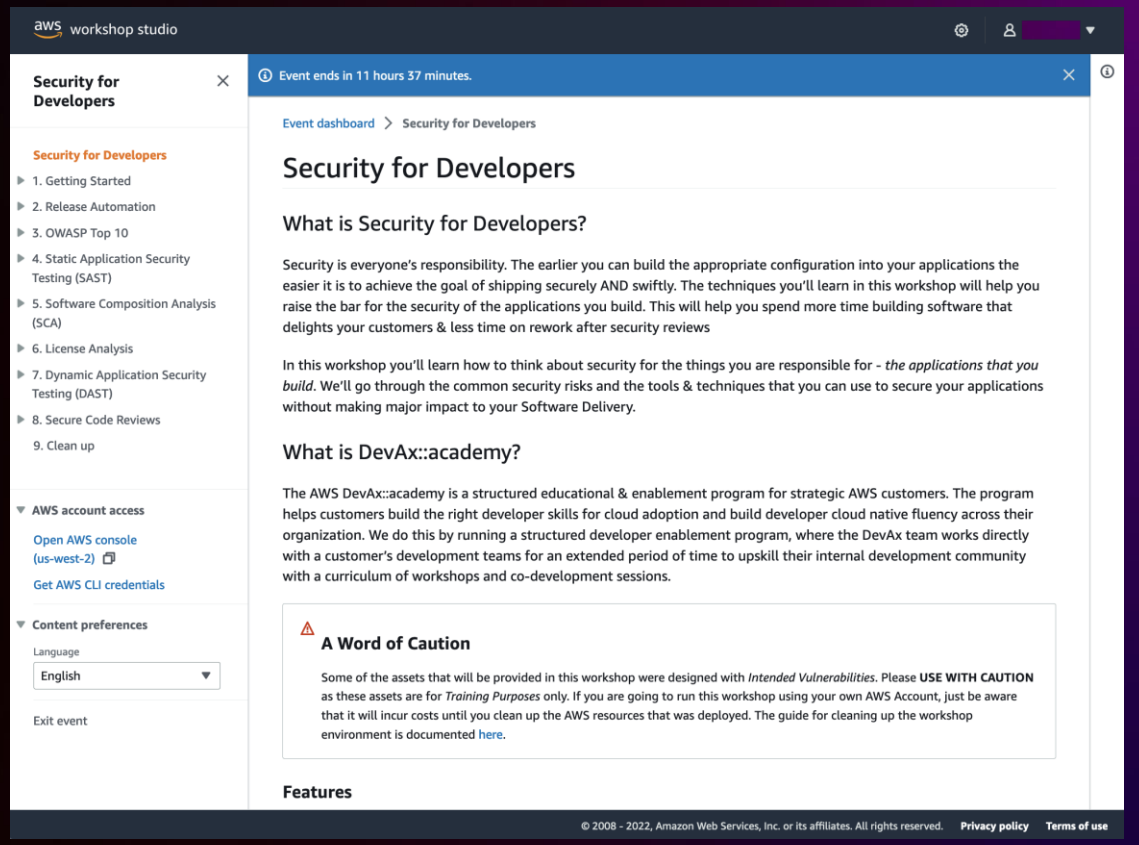
Step 5: Get started with the workshop





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Key takeaways

- Security **is everyone's responsibility**
- Embrace security as an **integral part of the process**, use **feedback** to refine the process
- Security must be **empowering**, not blocking
- DevSecOps **is not** one size fits all

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Thank you!

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