Seth & Ken's Excellent Adventures in Secure Code Review

Training Course
17th & 18th of October

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All training courses are two full days of intensive, hands-on learning and include complimentary morning tea, lunch and afternoon tea. Tickets can be secured buy going to the website https://appsecday.io/.

Course Abstract

This course introduces security and technology professionals alike to the nitty-gritty details of performing secure code reviews.

Have you ever been asked to review code manually with the intention of finding security issues such as SQL Injection, XSS, and Access Control flaws? What about assessing the security reputation of a new framework or library? Or being asked to review a pull request from a sensitive part of the code base? This course addresses all of these common challenges in modern secure code review.

- Code Review Methodology used to cover security issues
- Practical methods for identifying OWASP Top 10 vulnerabilities in:
  - Go
  - Ruby/Rails
  - Django/Python
  - Node/Express
  - Java/Spring
  - .Net/MVC,
- Open source code review tools available for different languages
- Hands-on experience identifying vulnerabilities in known-vulnerable code bases.

We have concentrated on taking our past adventures in code review, the lessons we've learned along the way, and made them applicable for others who perform code reviews. We will share our methodology to perform analysis of any source code and suss out security flaws, no matter the size of the code base, or the framework, or the language.

You as a student will learn the methodology, techniques, approach, and tools used by Seth Law and Ken Johnson to understand code flows, trace user input, identify vulnerabilities, and effectively secure an application code base.

What attendees will learn?

Students will take away knowledge and experience in approaching numerous code languages and frameworks to complete a security source code review. In addition, the learned methodology can be customized by the attendee to fit into any organization's security SDLC. Finally, the attendee will have the tools to review source code for any web, mobile, or modern application, whether or not the targeted language is specifically covered during the course.

What attendees will be provided?

- Presentation materials.
- Source code to be analyzed during the course (VM provided, if desired).

What attendees should bring?

- Laptop with wireless and virtual machine (VMWare/Virtual Box) capabilities.
- Preferred IDE.

Pre-requisites

Attendees should be familiar with the development process (SDLC) and where secure code reviews fit into the process. Attendees should have experience using an IDE, running command-line tools, and be able to read application source code. Attendee should have knowledge of the OWASP Top 10 and other common web vulnerabilities.

Detailed Outline

Day 1

- Overview
    - Introductions
    - What to Expect
    - Tools/Lab Setup
    - OWASP Top 10
- Code Review Methodology
    - Overview
        - Introduction to Methodology
        - Automated Tools
        - Manual Analysis
    - Information Gathering
        - Threat Modeling
        - Enumeration
        - AAA (Authentication/Authorization/Auditing)
        - Application Sources
        - Application Sinks
        - Other interesting finds
            - Comments
            - Keys
            - 3rd-party libraries
    - Authentication
        - User Enumeration
        - Timing Attacks
        - Password Complexity
        - Typical Logic Flaws
        - Insecure Password Resets
        - Insecure Forgot Password Functionality
        - Password Storage
    - Authorization
        - Broken Access Control
            - Insecure Direct Object Reference

- - Forced Browsing
    - Missing Function Level Access Control
  - Auditing
    - Sensitive Data Exposure
    - Logging Vulnerabilities
  - Injection
    - Input Validation
    - SQL Injection
      - ORM and ActiveRecord Patterns/Flaws
      - Examples from previous assessments
    - XXE
    - Server-Side Request Forgery
    - HTML/Content Injection
  - Cryptographic Analysis
    - Encoding vs. Encryption
    - Hashing
    - Stored Secrets
  - Configuration Review
    - Framework gotchas
    - Configuration files
    - Dependency Analysis

Day 2

- Technical Hands-On Review
  - Java
  - .Net
  - Ruby On Rails
  - Node.js
  - Django
  - iOS/Android

Trainer Biography

Ken Johnson

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Ken Johnson, has been hacking web applications professionally for 10 years and given security training for 7 of those years. Ken is both a breaker and builder and currently works on the GitHub application security team. Previously, Ken has spoken at RSA, You Sh0t the Sheriff, Insomnihack, CERN, DerbyCon, AppSec USA, AppSec DC, AppSec California, DevOpsDays DC, LASCON, RubyNation, and numerous Ruby, OWASP, and AWS events about appsec, devops security, and AWS security. Ken's current projects are WeirdAAL, OWASP Railsgoat, and the Absolute AppSec podcast with Seth Law.

Seth Law

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Seth Law is an experienced Application Security Professional with over 15 years of experience in the computer security industry. During this time, Seth has worked within multiple disciplines in the security field, from software development to network protection, both as a manager and individual contributor. Seth has honed his application security skills using offensive and defensive techniques, including tool development. Seth currently hosts the Absolute AppSec podcast with Ken Johnson and is a regular speaker at developer meetups and security events, including Blackhat, Defcon, CactusCon, and other regional conferences.