CYBERSECURITY WORKSHOP

U.S. DEPARTMENT OF DEFENSE

INDIANA UNIVERSITY OF PENNSYLVANIA

LAUREL BUSINESS AND TECHNICAL INSTITUTES

Proudly Presented By: DoD, IUP & LBI/LTI

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OCTOBER 3 & 10, 2020

Welcome!

We are so excited that you have chosen to participate in the DoD, IUP and LBI/LTI sponsored cybersecurity workshop. Provided in this packet, you will find:

- Workshop Schedule

- Activity and Lab Information

- Resources to continue your learning and expand your knowledge of cybersecurity and programming after the workshop has concluded

We look forward to increasing your knowledge of cybersecurity, and hope you have a thought provoking and rewarding experience.

Sincerely,

Dr. Waleed Farag
Director, IUP Institute for Cybersecurity, Professor of Computer Science, and DoD CySP Program Director

SESSION DESCRIPTIONS – DAY 1

INTRODUCTION TO DOD CYSP, CAE AT IUP, AND IUP CYBERSECURITY ACTIVITIES

Presenter: Dr. Waleed Farag, Program Director for IUP DoD CySP, Director of the IUP Institute for Cybersecurity, and Computer Science Professor at IUP.

Description: Introduction of various aspects of cybersecurity education at IUP and opening remarks for workshop participants.

INTRODUCTION TO AGILE MINDSET AND SCRUM METHODOLOGY

Presenter: Mr. Jeff Pulcini, Agile Coach and Project Manager

Description: Agile is a mindset and Scrum is perhaps the most popular methodology or framework employed. The goal of this interactive session is to introduce Agile as a philosophy, Scrum as a methodology/framework, the roles of those on the Scrum Team, and the ceremonies that are part of the process. Along the way we'll talk about how Agile differs from conventional methodologies and the benefits it brings..

HANDS-ON SESSION: RASPBERRY PI AND SECURITY APPLICATIONS

Presenter: Dr. Waleed Farag

Activity: Participants will learn how to assemble and operate their Raspberry Pi 4 kits, in addition to various cybersecurity related activities. Students will also learn secure coding techniques, writing their own code using Python and Java programming languages.

HANDS-ON WORKSHOP USING PHP AND MYSQL

Presenter: Dr. Imran Ghani, Associate Professor of Computer Science at IUP

Activity: In this Hands-on session, all participants will practice PHP and MySQL. This workshop will prepare participants to understand Phishing attack and SQL Injection to be done on Day 2. In this session, we will create front-end HTML forms for client, send data from HTML forms to Server for processing and save it in DB tables. We also create Tables schema and data entry in MySQL DB. We also select data from DB and display it to client.

SESSION DESCRIPTIONS – DAY 2

METHODS TO DECOMPOSE AND ADDRESS SYSTEM CYBER SECURITY THREAT RISKS

Presenter: Mr. Nigel Wright, Technical Program Manager, Uber

Activity: We will discuss ways to review an overall system, such as Hospital IT Infrastructure, Rail Signaling System, or Autonomous Vehicle, and evaluate the risks both present inherent operation and vulnerable to malicious attack. I will present some common industry cybersecurity attacks such as Stuxnet, the Tesla lane monitoring system hack, and others. We will then have an exercise reviewing a hypothetical physical / digital system (such as an Airport Security Theoretical System Design), we will give an overview of Kanban processes for program management. Finally, we will separate into three to four groups and use this mechanism in breakout rooms (using "t-shirt sizing" planning with post-it notes) to evaluate how to prioritize development to mitigate cybersecurity risks...

GROUP RESEARCH STUDY ON THE IMPORTANCE OF 5C'S IN AGILE TEAMS

Presenter: Dr. Imran Ghani, Associate Professor of Computer Science at IUP

Activity: In this session, participants will be given research papers or topics related to 5 C's: Communication, Cooperation, Coordination, Collaboration, and Control. Participants will be divided into groups using Zoom breakout rooms. They will read that material, discuss and analyze challenges related to 5 C's. We will relate this discussion with Cybersecurity practices.

HANDS-ON PHISHING EXERCISE USING PHP

Presenter: Dr. Imran Ghani, Associate Professor of Computer Science at IUP

Activity: Phishing is a way to illegally acquire information such as usernames, passwords, and credit card details by masquerading as a trustworthy entity in an electronic communication (web site, email, etc). Those fake websites are hosted on compromised sites without the owner's permission and are sent to the victims using mailing scripts, hosted or not in the same server where the phishing page is. Phishing pages are often complex and rely on several files to run. They will be hosted on a specific directory resembling the phishing target. We will Phish a website to see how to capture user/password of a user.

HANDS-ON SQL INJECTION EXERCISE USING PHP / MYSQL

Presenter: Dr. Imran Ghani, Associate Professor of Computer Science at IUP

Activity: Many web developers are unaware of how SQL queries can be tampered with, and assume that an SQL query is a trusted command. It means that SQL queries are able to circumvent access controls, thereby bypassing standard authentication and authorization checks, and sometimes SQL queries even may allow access to host operating system level commands. In this workshop, we will create a legitimate but vulnerable website then we will see how it behaves in the context of SQL injection. We will then mitigate that SQL injection.

ADDITIONAL RESOURCES

Visit the following websites to learn more about our sponsors and increase your knowledge of cybersecurity.

Indiana University of Pennsylvania
www.iup.edu

Department of Defense
www.defense.gov

Laurel Business and Technical Institutes
www.laurel.edu

IUP DoD CySP Information
www.iup.edu/dodscholarship

IUP Institute for Cybersecurity
www.iup.edu/cybersecurity

Department of Homeland Security
https://www.dhs.gov/topic/cybersecurity