Semester Project of CSE413 – Security of Information Systems 2020

Project Description V2 : 15.12.2020

Project Delivery : End of Finals

Please read this document at least 2 times

There will be a single project for this course. The project will have a 100% grading score. You can send me your project file and ask me how it looks time to time. I will only evaluate the visual appearance and the structure of your article. The content of the article will not be evaluated before the final project delivery.

In this project you are supposed to prepare a detailed academic style article written about the below security related topics:

- What is Information Security
- What is Data Privacy
    - Find a real happened case example of data privacy breach
- What are the human factors in information security and what vulnerabilities it can lead
    - Find a real happened case example of human factor vulnerability related hacking
- What is cryptography and sub-divisions of cryptography
    - Find a real happened case example of cryptographic vulnerability related hacking
- How does HTTPS work explain in details. How to strengthen TSL security
    - Find a real happened case example of man in middle attack

- What are Data Execution Prevention, Address Space Layout Randomization and CPU Protection Ring
- How Platform Virtualization works and what are Hypervisor levels
- What are Code injection, Cross-site Scripting (XSS), Email Header Injection, Host Header Injection, LDAP Injection, OS Command Injection, SQL Injection (SQLi), XPath injection attacks explain in details
  - Find a real happened case example for all attack types
- What is Incident Management explain in details
- What are Digital Forensics and Digital Evidence explain in details
  - Find a real happened case example where digital forensics played critical role
- What is User Authentication and explain different types of User Authentication models
  - Find a real happened case example of User Authentication vulnerability related hacking
- What are Password-based, Multi-factor, Certificate-based, Biometric, and Token-based authentication. Explain each one in details
  - Give detailed example of token-based authentication
- What is Tor – The Onion Router and how does it work
- What are firewalls and how do they provide security
- What is Malware explain in details
- Explain the followings in details: backdoor, trapdoor, logic bomb, trojan horse, worm, virus, stealth virus, polymorphic virus, metamorphic virus, exploit
- What is ransomware, how it works and how to prevent it

- o Find a real happened case where ransomware costed millions of dollars of loss

In addition to the article you are going to prepare, you are supposed to record a very high quality video (use OBS studio and record quality to *indistinguishable quality, audio 48k*) and explain every page of your report.

- This video is supposed to be at least 1 hour long.
- You have to have a proper microphone setup.
- The video will be uploaded to Youtube with full quality and the link will be shared in the article you have written.
- Youtube upload has to be public or unlisted.
- The article has to be written with fluent and grammar correct English as well as it has to be properly structured.
- Also it can be rich in images. Every resources you use must have a reference to the source.

The aim of this project is teaching you every kind of information security related topics. It is not just preparing a document by copy paste from the internet. Therefore not only your article quality, but also how well you explain them in the video is important.

Try to cover as many as topics you can. Remember, you have to explain every topic you have written in the video. Only the topics you covered in the video of your article will be counted for scoring.

The structure and visual appearance of your article will also get you higher score. Also how well it is written and how good in grammar is also important. So try to do your best.

Turkish students can record the video in Turkish. The article has to be in English. If you are a foreign student but can speak Turkish better than English, you can also record the video in Turkish.

1. **Everyone will be sending a Word or PDF document along with their final project files. This document will contain screenshots of your all comments to the lecture videos (all of the 14 lecture videos). Take screenshots with high resolution. Your comment has to be clearly readable. Those who fails to send this document will be counted as not attended to the lectures. Therefore they will get FF.**