

## **CS402: Cybercrime**

*School Information Technology, Engineering, Mathematics & Physics*

Semester 2, 2024

### **Assignment 1**

Web Security and Security Goals

#### **Learning Outcomes:**

2: Critically evaluate the web security domain and the Internet (as a network)

**Due Date: Thursday 5<sup>th</sup> September 2024; 11.59pm (Fiji Standard Time)**

**This assignment is worth 10% of your final grade for CS402**

#### **Submission**

1. Please work on this assignment as a group. One submission per group.
2. Submit the final report as a PDF and codes as a zip file.

#### **Late Submissions**

A 10% per day late submission penalty will be applied on the final mark attained.

## Safety and Security Engineering

Safety Engineering and Security Engineering are related. Explain the similarities and differences between them and describe the aspects that absolutely refer to security engineering (provide a brief explanation and give one example scenario for each field). (10 marks)

## Social Engineering Practical Attack

Katherine is a Systems Administrator at a prominent ISP in Fiji, and she is responsible for management of application and database servers. Aside from work, Katherine likes to play squash and is very active on Facebook.

Link: <https://www.facebook.com/profile.php?id=61564086396427>

You are tasked to perform reconnaissance and gather information about Katherine from her Facebook account, write a python program to generate all possible password combinations that Katherine could have.

For example, if the keywords identified are “car” and “family”, the possible combinations your Python program should generate are:

- car
- family
- carcar
- carfamily
- familycar
- familyfamily

Save the generated password list in a txt file and then use the given *bruteforce.py* to perform a brute force attack on the exposed database and find the correct password (in this case it is in your Azure VM).

Here we simulate the database server inside our virtual machine. We need to run the command inside the */home/Assignment1* path after logging into the VM.

**Use this command to find the password of *katherine* and the *root* user:**

*python3 bruteforce.py*

***Note: This practical is only for educational purposes.***

Include the following in your submission.

1. Code file for generating the password list. (4 marks)
2. Katherine’s password for the database. (4 marks)
3. Root users’ password for the database. (4 marks)
4. Screenshot of the outputs of the *bruteforce.py* for *katherine* and *root* users, as evidence that you found the password. (4 marks)
5. Login to the database as the root user using the command *mysql -u root -p* and include the output of *show databases*, command as a screenshot. (4 marks)

## Security Goals

1. Why does non-repudiation require secure timestamping in many cases? (2 marks)
2. Why is integrity of logfiles important to achieve accountability? (2 marks)
3. Why is it very hard to estimate the complete attack surface of a given system? (2 marks)
4. Someone tells you that you can “just encrypt data” and you can be sure that the following security goals are achieved: confidentiality, integrity, and authenticity. For each goal, explain if the person is right or wrong. (4 marks)

## Marking Criteria

Sections	Marks
Safety and Security Engineering	10
Social Engineering Practical Attack	20
Security Goals	10

## Please ensure the assignment includes the following:

1. Course Code, Course Name, Assignment number, Group number and Work Distribution.
2. Ensure all sources are cited and a bibliography is included in IEEE style
3. Ensure your work is **free from plagiarism** and does not breach copyright.

## Plagiarism

Any kind of plagiarism or cheating like submission of work that is not your own will lead to a ZERO (0) score AND you will be subject to disciplinary action. Discussing is permitted however you must avoid giving your working copy or the final assignment file to anyone. This increases the risk of your assignment being cited as a plagiarized work. ALL plagiarized assignments will receive a mark of ZERO and will be referred to the Disciplinary Committee.

## Assignment Clarification

It is expected that students will seek clarifications regarding this assignment. For any such clarification, you may post a message on Moodle Discussion Forums under the Assignment 1 Discussion Forum only.

Any message relating to the Assignment placed under a different topic WILL NOT be looked at or answered. At the same time, please note that you are not allowed to share/discuss your Assignment on these forums. Students must refrain from placing their assignments on the discussion forum. Students found doing this will be referred to the Disciplinary Committee and will also be awarded a mark of ZERO.

**THE END**