CSCI 4621/5621 INTRODUCTION TO CYBERSECURITY

Spring 2024

LAB #2: *Password Cracking*
DUE: *March 19, 11:59pm*

DESCRIPTION AND DELIVERABLES

In this project, you will try to crack as many passwords as possible. Assume that you hacked a Linux based system and retrieve the shadow file (uploaded to Canvas). The shadow file contains 16 users' password information. You want to crack their password. You can implement bruteforce attack, dictionary attack, or any type of attack that you think can work.

Note that shadow file contains username, encryption algorithm, salt and hash values of that password, and other information. You can check the format of shadow file online.

In order to crack the passwords, you can use any password cracking software such as John the Ripper, Hashcat, and Hydra.

For dictionary attack, you can use available dictionaries, e.g. "rockyou".

What to Deliver:

Write a short report containing all the passwords that you cracked. Don't forget to include the username of that password (e.g. username:password).

In your report, shortly discuss what are the possible reasons that you were able to crack those passwords and not others.

Also, shortly discuss about how to generate strong passwords.

Note: We have 16 passwords. 10 of them are easy to crack, 6 of them are a little bit hard to crack. All passwords are English words or numbers. However, they may contain numbers, special characters, uppercase, lowercase etc.

Grading: In case you crack 10 passwords, you can get full points. If you crack more than 10 passwords, you can get extra points.

Additional Info: It may take some time to crack passwords. In case you do not want to keep your computer running for a long time, you may consider using a cloud virtual machine.

For example, Google provides $300 free credits for 3 months trial period. You can use their services to create a virtual machine and run your code in there.

Other companies like Amazon and Microsoft may provide a similar service. You can check their student support pages to learn more details.