

CSE 345/545: Foundations to Computer Security
ASSIGNMENT 1 (TOTAL OF 45 POINTS)
Deadline: Thursday, September 10, 2020

Instructions:

- Do the Assignment individually.
- Make one PDF format file for writing your analysis/results
- Python is the preferred programming language, submit .py files
- Zip all your files along in <RollNo_Name_Assignment1>.zip format.
Example 201556073_Swati.zip
- Queries, if any can be posted on google classroom .
- Note: Answer the questions in bullet points. Keep your responses crisp and to the point.
- Please avoid plagiarism, mention any reference if taken.

1. Everyone has 6 fingers on Planet Doom, so naturally, they use base 12. However, their alphabets and special characters are the same as ours. How many unique 6 character passwords are possible if the following rules should be followed:

- a. At least one number and one special character should be there.
- b. Passwords cannot start with a number or a special character.

How did you arrive with the number? Clearly state any assumptions made.

5 marks

2. Passwords should be easy to remember, but plain english passwords are prone to dictionary attacks.

- a. Write a program in Python to convert plain english text into easy to remember but hard to crack password. [Ex: password -> P@s2w0rD].
- b. Write a program in Python to perform a dictionary attack. Input will be the password length and the output will be a text file with all passwords you came up with. Make the attack efficient by keeping in mind what rules you followed to make a password strong in 2.a. [A list of all english words can be downloaded from the web. Only submit the source code. Name the python files as Roll_No_2_a.py, Roll_No_2_b.py]

[5+5] = 10 marks

3. Classify the below-mentioned passwords as very strong, strong, neutral, weak, very weak. What was your discretion in classification?

1. 1q2w3e4r5t
2. Football
3. 983749587
4. 4><8mM%
5. FCSPassword1
6. &*^)&@_(\$%
7. SecurePassword@123
8. monkey
9. Hello!
10. Qwertyuiop

[1*10] = 10 marks

4. Students are divided into two groups with Chole Bhature, while some want the dish on Friday, others want it on Saturday. IIIT-D is looking for a robust online voting system.

- a. If you were to design the system, what security concepts will you consider?
- b. Discuss the Authentication mechanism in detail.
- c. How will you ensure the confidentiality and integrity of the voting system?

[5+5+5] = 15 marks

5. You are the subordinate of Mr. Holmes. To break into a bank vault you have to use social engineering. Write down your target(s) and questions you will ask the target to successfully break-in.

5 marks