# **Password Hashing and Cracking Report**

# Task 01: Determining the Hash Type

In this task, I used the **Hash Lookup Analyzer** tool to identify the hash types of the following three hashes and determine the corresponding cleartext password.

#### Hashes:

- 1. 5366a90275a8fc64acbaab5d697e6d94
- 2. a9f44ff05b323527ca3a496c791faf050a1239c6
- 3. 462b0be44f0b7738bc83ac62ad132911e97a5cb6f60ffe6fc161f2f5acbb2ce7

### **Hash Types Identified:**

- **Hash 1:** MD5
- Hash 2: SHA1
- Hash 3: SHA-256

After running the hashes through the **Hash Lookup Analyzer**, I discovered that the cleartext password for all three hashes was:

• Cleartext Password: ilovecit

a9f44ff05b323527ca3a496c791faf050a1239c6:ilovecit

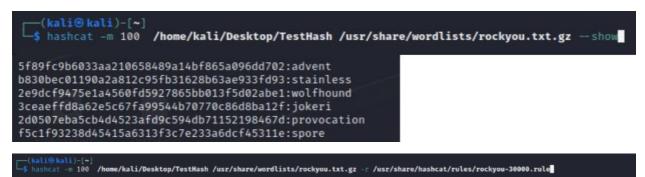
## **Task 02: Password Cracking**

For this task, I was given a collection of 15 hashed passwords from a security breach. My goal was to determine if these passwords were easily crackable using tools like **John the Ripper** or **Hashcat**, utilizing the **rockyou** wordlist.

#### **List of Hashes:**

- 1. b830bec01190a2a812c95fb31628b63ae933fd93
- 2. 5c58c6b2cf12b733b02b8d29e386d4119aac6db6
- 3. 2d0507eba5cb4d4523afd9c594db71152198467d
- 4. 2ab33fd22007e8d65d944c5d4e7ff84ba9c4a05e
- 5. 3a9cdab8ea9e98f0d997401fa3a1d73dce4e98e8
- 6. 3ceaeffd8a62e5c67fa99544b70770c86d8ba12f
- 7. 04602ae9d6f95db81251caaa2163c9e71ce1ef39
- 8. 2e9dcf9475e1a4560fd5927865bb013f5d02abe1
- 9. 2b9b3cf4a0a03662e7662dcc7476f1d65c62635a
- 10. 1833cffe02b4dd3e5130e5aa0e9b8abb82c08f59
- 11. 5f89fc9b6033aa210658489a14bf865a096dd702
- 12. f5c1f93238d45415a6313f3c7e233a6dcf45311e
- 13. 6c9709fce7b1b2dd11f8e424b868a8bfff44342f
- 14. 33cab4f0593def9f66c7a172c719c040a44701a3
- 15. 042a5a9bab02a1be32581db9013aabad43413a06

Using John the Ripper and Hashcat, I was able to crack several passwords from the list.



## 2b9b3cf4a0a03662e7662dcc7476f1d65c62635a:cons.

33cab4f0593def9f66c7a172c719c040a44701a3:anja1988

5c58c6b2cf12b733b02b8d29e386d4119aac6db6:advantaged

## 6c9709fce7b1b2dd11f8e424b868a8bfff44342f:mystery66

Here are the cracked passwords:

#### **Cracked Hashes:**

- 1. **b830bec01190a2a812c95fb31628b63ae933fd93** stainless
- 2. **5f89fc9b6033aa210658489a14bf865a096dd702** advent
- 3. 5c58c6b2cf12b733b02b8d29e386d4119aac6db6 advantaged
- 4. **2d0507eba5cb4d4523afd9c594db71152198467d** provocation
- 5. **f5c1f93238d45415a6313f3c7e233a6dcf45311e** spore
- 6. 6c9709fce7b1b2dd11f8e424b868a8bfff44342f mystery66
- 7. 3ceaeffd8a62e5c67fa99544b70770c86d8ba12f jokeri
- 8. **33cab4f0593def9f66c7a172c719c040a44701a3** anja1988
- 9. 2e9dcf9475e1a4560fd5927865bb013f5d02abe1 wolfhound
- 10. 2b9b3cf4a0a03662e7662dcc7476f1d65c62635a cons.

The remaining hashes were either not cracked within the time frame or required advanced cracking methods.

# Task 03: Generating Custom Lists with Crunch and CeWL

For this task, I generated two custom wordlists using the **Crunch** and **CeWL** tools.

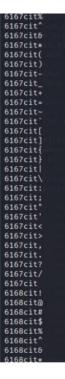
### **Using Crunch:**

The task required generating a wordlist for 8-character passwords with the following pattern: four numbers followed by the word "cit" and a special character (e.g., 1234cit?).

The command I ran to generate the list was:

crunch 8 8 -t %%%%cit^ -0 crunchwordlist.txt

Here's a snippet of the generated wordlist:



### **Using CeWL:**

Next, I crawled the website livlab.org to a depth of 1 and generated a wordlist with terms relevant to the site.

The command I used was:

Here's a snippet of the generated wordlist:



# **Task 04: Calculating Brute Force Time**

In this task, I was asked to calculate how long it would take to brute-force a 9-character NTDS password using all 95 different character types (A-Z, a-z, 0-9, special characters) and six GPUs.

### **Keyspace Calculation:**

The available charset is 95 characters, and for a 9-character password, the keyspace is:

Keyspace=959=630,249,409,724,609,375\text{Keyspace} = 95^9 = 630,249,409,724,609,375Keyspace=959=630,249,409,724,609,375

#### **Cracking Time in Seconds:**

The hash rate of a single Nvidia RTX 3090 GPU is 121.8 GH/s. Using six GPUs, the total hash rate is calculated as follows:

Total Hash Rate =  $121.8 \text{ GH/s} \times 6 = 730,800,000,000 \text{ hashes per second}$ 

Using the formula for cracking time:

Cracking Time = Keyspace / Total Hash Rate = 630,249,409,724,609,375 /  $730,800,000,000 \approx 862,410$  seconds

#### **Cracking Time in Weeks:**

To convert the cracking time from seconds to weeks, we use the following calculation:

Cracking Time (in weeks) = 862,410 seconds / 604,800 seconds per week ≈ 1.43 weeks

### Conclusion

Through the tasks in this report, I explored different aspects of password hashing and cracking. I successfully identified hash types, cracked several hashed passwords, and generated custom wordlists to assist in cracking. I also estimated the time it would take to brute-force a password using multiple GPUs, providing an understanding of the scale involved in password cracking.