Task 6 : Create a Strong Password and Evaluate Its Strength.

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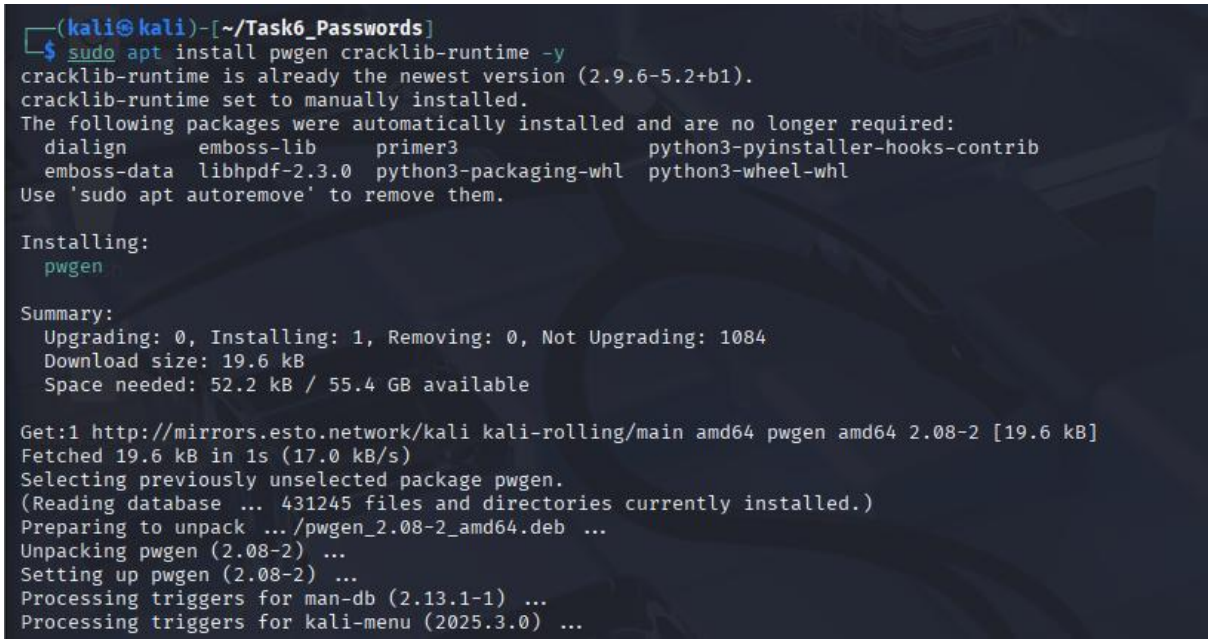
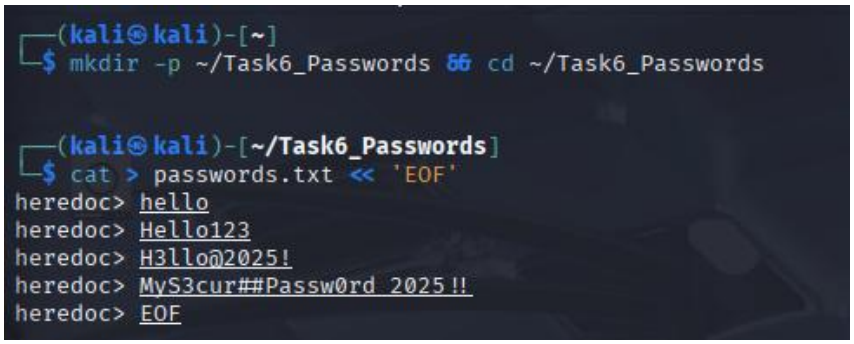
Introduction :

In this task, we create passwords with different complexity levels, test their strength using online tools, analyze the results, and summarize best practices for building secure passwords.

1] Installed cracklib-runtime



2] Generate a few random passwords and stored in passwords.txt



3] Local strength check with cracklib-check

```
┌──(kali㉿kali)-[~/Task6_Passwords]
└─$ pwgen -sy 16 5 > generated.txt

┌──(kali㉿kali)-[~/Task6_Passwords]
└─$ openssl rand -base64 18 >> generated.txt

┌──(kali㉿kali)-[~/Task6_Passwords]
└─$ # For each password in passwords.txt, show cracklib-check output
while IFS= read -r p; do
  echo -n "$p: "
  echo "$p" | cracklib-check
done < passwords.txt

hello: hello: it is too short
Hello123: Hello123: it is based on a dictionary word
H3llo@2025!: H3llo@2025!: OK
MyS3cur##Passw0rd_2025!!: MyS3cur##Passw0rd_2025!!: OK
```

4] Compute approximate entropy (bits) for each password

```
┌──(kali㉿kali)-[~/Task6_Passwords]
└─$ python3 - <<'PY'
import math
charset = 94  # typical printable ASCII set (26+26+10+32)
with open('passwords.txt') as f:
    for pw in f:
        pw = pw.strip()
        if not pw: continue
        entropy = len(pw) * math.log2(charset)
        print(f"{pw:30} len={len(pw):2}  entropy≈{entropy:.2f} bits")
PY

hello                          len= 5  entropy≈32.77 bits
Hello123                       len= 8  entropy≈52.44 bits
H3llo@2025!                    len=11  entropy≈72.10 bits
MyS3cur##Passw0rd_2025!!       len=24  entropy≈157.31 bits
```

Higher bits = stronger (≥80 bits is generally strong for passwords/passphrases).

Online checks for demonstration : Checked on passwordmeter.com

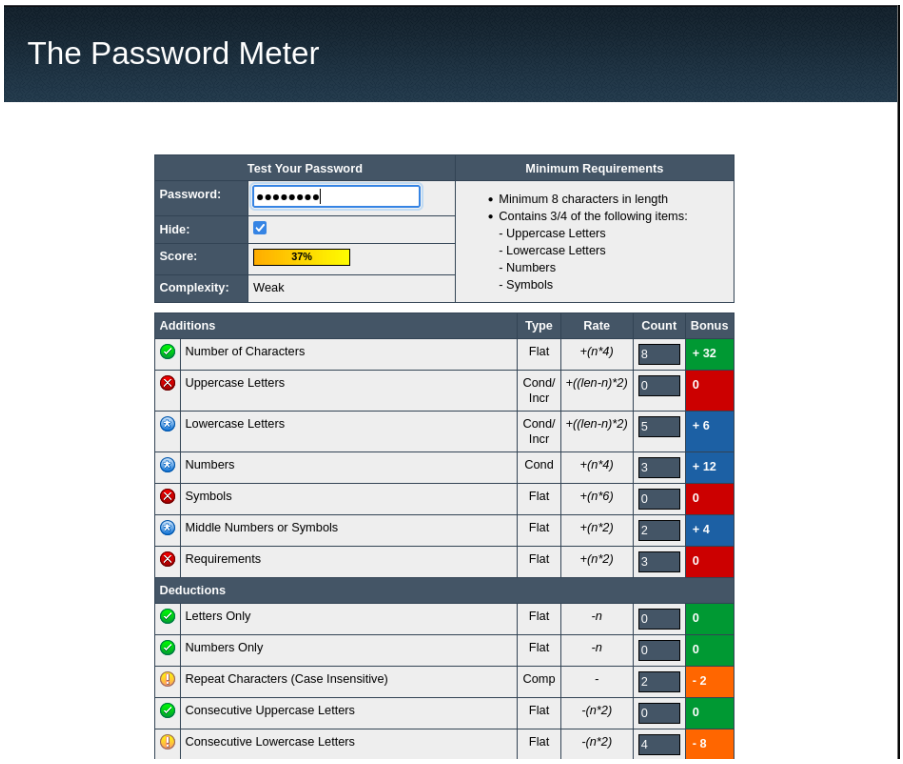
1] Very Weak password: hello

The Password Meter

Test Your Password		Minimum Requirements
Password:	●●●●●	• Minimum 8 characters in length • Contains 3/4 of the following items: - Uppercase Letters - Lowercase Letters - Numbers - Symbols
Hide:	☑	
Score:	4%	
Complexity:	Very Weak	

Additions		Type	Rate	Count	Bonus
✗	Number of Characters	Flat	+(n*4)	5	+ 20
✗	Uppercase Letters	Cond/ Incr	+((len-n)*2)	0	0
✓	Lowercase Letters	Cond/ Incr	+((len-n)*2)	5	0
✗	Numbers	Cond	+(n*4)	0	0
✗	Symbols	Flat	+(n*6)	0	0
✗	Middle Numbers or Symbols	Flat	+(n*2)	0	0
✗	Requirements	Flat	+(n*2)	1	0
Deductions					
!	Letters Only	Flat	-n	5	- 5
✓	Numbers Only	Flat	-n	0	0
!	Repeat Characters (Case Insensitive)	Comp	-	2	- 3
✓	Consecutive Uppercase Letters	Flat	-(n*2)	0	0
!	Consecutive Lowercase Letters	Flat	-(n*2)	4	- 8

2] Weak- Medium password: Hello123



The Password Meter

Test Your Password		Minimum Requirements
Password:	●●●●●●●●	• Minimum 8 characters in length • Contains 3/4 of the following items: - Uppercase Letters - Lowercase Letters - Numbers - Symbols
Hide:	☑	
Score:	37%	
Complexity:	Weak	

Additions		Type	Rate	Count	Bonus
✓	Number of Characters	Flat	+(n*4)	8	+ 32
✗	Uppercase Letters	Cond/ Incr	+((len-n)*2)	0	0
✓	Lowercase Letters	Cond/ Incr	+((len-n)*2)	5	+ 6
✓	Numbers	Cond	+(n*4)	3	+ 12
✗	Symbols	Flat	+(n*6)	0	0
✓	Middle Numbers or Symbols	Flat	+(n*2)	2	+ 4
✗	Requirements	Flat	+(n*2)	3	0
Deductions					
✓	Letters Only	Flat	-n	0	0
✓	Numbers Only	Flat	-n	0	0
!	Repeat Characters (Case Insensitive)	Comp	-	2	- 2
✓	Consecutive Uppercase Letters	Flat	-(n*2)	0	0
!	Consecutive Lowercase Letters	Flat	-(n*2)	4	- 8

3]Medium – Strong : H3llo@2025!

Test Your Password		Minimum Requirements
Password:	••••••••••••	• Minimum 8 characters in length • Contains 3/4 of the following items: - Uppercase Letters - Lowercase Letters - Numbers - Symbols
Hide:	☑	
Score:	100%	
Complexity:	Very Strong	

Additions	Type	Rate	Count	Bonus
Number of Characters	Flat	+(n*4)	11	+ 44
Uppercase Letters	Cond/ Incr	+((len-n)*2)	1	+ 20
Lowercase Letters	Cond/ Incr	+((len-n)*2)	3	+ 16
Numbers	Cond	+(n*4)	5	+ 20
Symbols	Flat	+(n*6)	2	+ 12
Middle Numbers or Symbols	Flat	+(n*2)	6	+ 12
Requirements	Flat	+(n*2)	5	+ 10
Deductions				
Letters Only	Flat	-n	0	0
Numbers Only	Flat	-n	0	0
Repeat Characters (Case Insensitive)	Comp	-	4	- 1
Consecutive Uppercase Letters	Flat	-(n*2)	0	0
Consecutive Lowercase Letters	Flat	-(n*2)	2	- 4
Consecutive Numbers	Flat	-(n*2)	3	- 6
Sequential Letters (3+)	Flat	-(n*3)	0	0
Sequential Numbers (3+)	Flat	-(n*3)	0	0
Sequential Symbols (3+)	Flat	-(n*3)	0	0

4] Very Strong : MyS3cur3#Passw0rd_2025!!

Test Your Password		Minimum Requirements
Password:	••••••••••••••••••••••	• Minimum 8 characters in length • Contains 3/4 of the following items: - Uppercase Letters - Lowercase Letters - Numbers - Symbols
Hide:	☑	
Score:	100%	
Complexity:	Very Strong	

Additions	Type	Rate	Count	Bonus
Number of Characters	Flat	+(n*4)	24	+ 96
Uppercase Letters	Cond/ Incr	+((len-n)*2)	3	+ 42
Lowercase Letters	Cond/ Incr	+((len-n)*2)	10	+ 28
Numbers	Cond	+(n*4)	7	+ 28
Symbols	Flat	+(n*6)	3	+ 18
Middle Numbers or Symbols	Flat	+(n*2)	9	+ 18
Requirements	Flat	+(n*2)	5	+ 10
Deductions				
Letters Only	Flat	-n	0	0
Numbers Only	Flat	-n	0	0
Repeat Characters (Case Insensitive)	Comp	-	12	- 3
Consecutive Uppercase Letters	Flat	-(n*2)	0	0
Consecutive Lowercase Letters	Flat	-(n*2)	6	- 12
Consecutive Numbers	Flat	-(n*2)	3	- 6
Sequential Letters (3+)	Flat	-(n*3)	0	0
Sequential Numbers (3+)	Flat	-(n*3)	0	0
Sequential Symbols (3+)	Flat	-(n*3)	0	0

Conclusion :

Creating and evaluating different passwords showed that length and character variety dramatically increase resistance to cracking. Local tools (cracklib-check) and entropy estimates corroborate online scores. Following passphrase-based best practices and using password managers significantly improves account security.