

## TASK-6

### PASSWORD STRENGTH CHECKING

Tool used: [passwordmeter.com](https://passwordmeter.com)

#### 1. CREATING MULTIPLE PASSWORDS:

1. 19a34sas
2. 19@34SaS
3. 1@2b3c4d
4. @\$#123
5. 11@22\$33##
6. P@55w0rd

#### 2. TESTING PASSWORDS:

1. 19a34sas

#### The Password Meter

Test Your Password		Minimum Requirements			
Password:	*****	<ul style="list-style-type: none"><li>Minimum 8 characters in length</li><li>Contains 3/4 of the following items:<ul style="list-style-type: none"><li>Uppercase Letters</li><li>Lowercase Letters</li><li>Numbers</li><li>Symbols</li></ul></li></ul>			
Hide:	<input checked="" type="checkbox"/>				
Score:	52%				
Complexity:	Good				
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	$+(len-n)^2$	4	+ 8
Ⓝ	Numbers	Cond	$+(n^4)$	4	+ 16
✗	Symbols	Flat	$+(n^6)$	0	0
Ⓜ	Middle Numbers or Symbols	Flat	$+(n^2)$	3	+ 6
✗	Requirements	Flat	$+(n^2)$	3	0
Deductions					
✓	Letters Only	Flat	$-n$	0	0
✓	Numbers Only	Flat	$-n$	0	0
⚠	Repeat Characters (Case Insensitive)	Comp	-	4	- 2
✓	Consecutive Uppercase Letters	Flat	$-(n^2)$	0	0
⚠	Consecutive Lowercase Letters	Flat	$-(n^2)$	2	- 4
⚠	Consecutive Numbers	Flat	$-(n^2)$	2	- 4
✓	Sequential Letters (3+)	Flat	$-(n^3)$	0	0
✓	Sequential Numbers (3+)	Flat	$-(n^3)$	0	0
✓	Sequential Symbols (3+)	Flat	$-(n^3)$	0	0
Legend					

2.19@34SaS:

The Password Meter

Test Your Password

Minimum Requirements

Password:

Hide: ☒

Score: 

93%

Complexity: Very Strong

• Minimum 8 characters in length

• Contains 3/4 of the following items:

- Uppercase Letters

- Lowercase Letters

- Numbers

- Symbols

Additions	Type	Rate	Count	Bonus
<input checked="" type="checkbox"/> Number of Characters	Flat	$+(n^4)$	<input type="text" value="8"/>	+ 32
<input checked="" type="checkbox"/> Uppercase Letters	Cond/Incr	$+(len-n)^2$	<input type="text" value="2"/>	+ 12
<input checked="" type="checkbox"/> Lowercase Letters	Cond/Incr	$+(len-n)^2$	<input type="text" value="1"/>	+ 14
<input checked="" type="checkbox"/> Numbers	Cond	$+(n^4)$	<input type="text" value="4"/>	+ 16
<input checked="" type="checkbox"/> Symbols	Flat	$+(n^6)$	<input type="text" value="1"/>	+ 6
<input checked="" type="checkbox"/> Middle Numbers or Symbols	Flat	$+(n^2)$	<input type="text" value="4"/>	+ 8
<input checked="" type="checkbox"/> Requirements	Flat	$+(n^2)$	<input type="text" value="5"/>	+ 10

Deductions

<input checked="" type="checkbox"/> Letters Only	Flat	-n	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Numbers Only	Flat	-n	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Repeat Characters (Case Insensitive)	Comp	-	<input type="text" value="2"/>	- 1
<input checked="" type="checkbox"/> Consecutive Uppercase Letters	Flat	$-(n^2)$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Consecutive Lowercase Letters	Flat	$-(n^2)$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Consecutive Numbers	Flat	$-(n^2)$	<input type="text" value="2"/>	- 4
<input checked="" type="checkbox"/> Sequential Letters (3+)	Flat	$-(n^3)$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Sequential Numbers (3+)	Flat	$-(n^3)$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Sequential Symbols (3+)	Flat	$-(n^3)$	<input type="text" value="0"/>	0

Legend

3.1@2b3c4d:

The Password Meter

Test Your Password

Minimum Requirements

Password:

Hide: ☒

Score: 

80%

Complexity: Very Strong

• Minimum 8 characters in length

• Contains 3/4 of the following items:

- Uppercase Letters

- Lowercase Letters

- Numbers

- Symbols

Additions	Type	Rate	Count	Bonus
<input checked="" type="checkbox"/> Number of Characters	Flat	$+(n^4)$	<input type="text" value="8"/>	+ 32
<input checked="" type="checkbox"/> Uppercase Letters	Cond/Incr	$+(len-n)^2$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Lowercase Letters	Cond/Incr	$+(len-n)^2$	<input type="text" value="3"/>	+ 10
<input checked="" type="checkbox"/> Numbers	Cond	$+(n^4)$	<input type="text" value="4"/>	+ 16
<input checked="" type="checkbox"/> Symbols	Flat	$+(n^6)$	<input type="text" value="1"/>	+ 6
<input checked="" type="checkbox"/> Middle Numbers or Symbols	Flat	$+(n^2)$	<input type="text" value="4"/>	+ 8
<input checked="" type="checkbox"/> Requirements	Flat	$+(n^2)$	<input type="text" value="4"/>	+ 8

Deductions

<input checked="" type="checkbox"/> Letters Only	Flat	-n	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Numbers Only	Flat	-n	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Repeat Characters (Case Insensitive)	Comp	-	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Consecutive Uppercase Letters	Flat	$-(n^2)$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Consecutive Lowercase Letters	Flat	$-(n^2)$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Consecutive Numbers	Flat	$-(n^2)$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Sequential Letters (3+)	Flat	$-(n^3)$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Sequential Numbers (3+)	Flat	$-(n^3)$	<input type="text" value="0"/>	0
<input checked="" type="checkbox"/> Sequential Symbols (3+)	Flat	$-(n^3)$	<input type="text" value="0"/>	0

4. @ \$ # 123:

## The Password Meter

Test Your Password		Minimum Requirements			
Password:	*****	<ul style="list-style-type: none"><li>Minimum 8 characters in length</li><li>Contains 3/4 of the following items:<ul style="list-style-type: none"><li>Uppercase Letters</li><li>Lowercase Letters</li><li>Numbers</li><li>Symbols</li></ul></li></ul>			
Hide:	<input checked="" type="checkbox"/>				
Score:	55%				
Complexity:	Good				
Additions		Type	Rate	Count	Bonus
<input checked="" type="checkbox"/> Number of Characters		Flat	$+(n*4)$	6	+ 24
<input checked="" type="checkbox"/> Uppercase Letters		Cond/ Incr	$+(len-n)*2$	0	0
<input checked="" type="checkbox"/> Lowercase Letters		Cond/ Incr	$+(len-n)*2$	0	0
<input checked="" type="checkbox"/> Numbers		Cond	$+(n*4)$	3	+ 12
<input checked="" type="checkbox"/> Symbols		Flat	$+(n*6)$	3	+ 18
<input checked="" type="checkbox"/> Middle Numbers or Symbols		Flat	$+(n*2)$	4	+ 8
<input checked="" type="checkbox"/> Requirements		Flat	$+(n*2)$	2	0
Deductions					
<input checked="" type="checkbox"/> Letters Only		Flat	$-n$	0	0
<input checked="" type="checkbox"/> Numbers Only		Flat	$-n$	0	0
<input checked="" type="checkbox"/> Repeat Characters (Case Insensitive)		Comp	-	0	0
<input checked="" type="checkbox"/> Consecutive Uppercase Letters		Flat	$-(n*2)$	0	0
<input checked="" type="checkbox"/> Consecutive Lowercase Letters		Flat	$-(n*2)$	0	0
<input checked="" type="checkbox"/> Consecutive Numbers		Flat	$-(n*2)$	2	- 4
<input checked="" type="checkbox"/> Sequential Letters (3+)		Flat	$-(n*3)$	0	0
<input checked="" type="checkbox"/> Sequential Numbers (3+)		Flat	$-(n*3)$	1	- 3
<input checked="" type="checkbox"/> Sequential Symbols (3+)		Flat	$-(n*3)$	0	0

5. 11 @ 22 \$ 33 #:

## The Password Meter

Test Your Password		Minimum Requirements			
Password:	*****	<ul style="list-style-type: none"><li>Minimum 8 characters in length</li><li>Contains 3/4 of the following items:<ul style="list-style-type: none"><li>Uppercase Letters</li><li>Lowercase Letters</li><li>Numbers</li><li>Symbols</li></ul></li></ul>			
Hide:	<input checked="" type="checkbox"/>				
Score:	82%				
Complexity:	Very Strong				
Additions		Type	Rate	Count	Bonus
<input checked="" type="checkbox"/> Number of Characters		Flat	$+(n*4)$	9	+ 36
<input checked="" type="checkbox"/> Uppercase Letters		Cond/ Incr	$+(len-n)*2$	0	0
<input checked="" type="checkbox"/> Lowercase Letters		Cond/ Incr	$+(len-n)*2$	0	0
<input checked="" type="checkbox"/> Numbers		Cond	$+(n*4)$	6	+ 24
<input checked="" type="checkbox"/> Symbols		Flat	$+(n*6)$	3	+ 18
<input checked="" type="checkbox"/> Middle Numbers or Symbols		Flat	$+(n*2)$	7	+ 14
<input checked="" type="checkbox"/> Requirements		Flat	$+(n*2)$	3	0
Deductions					
<input checked="" type="checkbox"/> Letters Only		Flat	$-n$	0	0
<input checked="" type="checkbox"/> Numbers Only		Flat	$-n$	0	0
<input checked="" type="checkbox"/> Repeat Characters (Case Insensitive)		Comp	-	6	- 4
<input checked="" type="checkbox"/> Consecutive Uppercase Letters		Flat	$-(n*2)$	0	0
<input checked="" type="checkbox"/> Consecutive Lowercase Letters		Flat	$-(n*2)$	0	0
<input checked="" type="checkbox"/> Consecutive Numbers		Flat	$-(n*2)$	3	- 6
<input checked="" type="checkbox"/> Sequential Letters (3+)		Flat	$-(n*3)$	0	0
<input checked="" type="checkbox"/> Sequential Numbers (3+)		Flat	$-(n*3)$	0	0
<input checked="" type="checkbox"/> Sequential Symbols (3+)		Flat	$-(n*3)$	0	0

6.P@55w0rd:

## The Password Meter

Test Your Password		Minimum Requirements			
Password:	*****	<ul style="list-style-type: none"><li>Minimum 8 characters in length</li><li>Contains 3/4 of the following items:<ul style="list-style-type: none"><li>Uppercase Letters</li><li>Lowercase Letters</li><li>Numbers</li><li>Symbols</li></ul></li></ul>			
Hide:	<input checked="" type="checkbox"/>				
Score:	86%				
Complexity:	Very Strong				
Additions		Type	Rate	Count	Bonus
✓	Number of Characters	Flat	$+(n*4)$	8	+ 32
✓	Uppercase Letters	Cond/Incr	$+(len-n)*2)$	1	+ 14
ⓘ	Lowercase Letters	Cond/Incr	$+(len-n)*2)$	3	+ 10
ⓘ	Numbers	Cond	$+(n*4)$	3	+ 12
✓	Symbols	Flat	$+(n*6)$	1	+ 6
ⓘ	Middle Numbers or Symbols	Flat	$+(n*2)$	4	+ 8
ⓘ	Requirements	Flat	$+(n*2)$	5	+ 10
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	$-(n*2)$	1	- 2
ⓘ	Consecutive Numbers	Flat	$-(n*2)$	1	- 2
✓	Sequential Letters (3+)	Flat	$-(n*3)$	0	0
✓	Sequential Numbers (3+)	Flat	$-(n*3)$	0	0
✓	Sequential Symbols (3+)	Flat	$-(n*3)$	0	0

### 3.BEST PRACTICES TO CREATE STRONG PASSWORDS:

- 1.Use at least 12–16 characters.
- 2.Include a mix of uppercase, lowercase, numbers, and symbols.
- 3.Avoid dictionary words, names, or predictable patterns.
- 4.Use passphrases made of unrelated words with symbols (e.g., Apple!Toodles#1954@Skip).
- 5.Consider using a password manager to store strong, unique passwords for each account.

#### 4. Tips Learned from the Evaluation:

- Length matters more than complexity alone.
- Substituting letters with numbers (like P@ssw0rd) is not enough.
- Avoid repeating numbers or predictable sequences.
- Symbols and varied character types increase cracking time significantly.
- Randomly generated passwords are typically stronger than human-created ones.

#### 5. Common Password Attacks:

ATTACK	DESCRIPTION
BRUTE FORCE	Tries all possible combinations; mitigated by longer passwords
DICTIONARY ATTACK	Uses a list of common words and combinations
CREDENTIAL STUFFING	Uses leaked username-password pairs on different services
PHISHING	Tricks user into giving up password voluntarily
KEYLOGGING	Captures keystrokes using malware

## 6. Summary: How Password Complexity Affects Security:

- Complex passwords are **exponentially harder** to crack with brute-force or dictionary attacks.
- Adding just a few characters **drastically increases cracking time**.
- Passwords combining **length and randomness** are most resistant to attacks.
- Common passwords or simple substitutions are **easily guessed or cracked**.
- Passwords should not be reused across sites to prevent **credential stuffing**.