

# Assignment 1

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- Password Strength Checker using Java (OOP): -

## **First: Objective:**

- The objective of this project is to create a Java program that checks the strength of a user's password based on specific security criteria.

The program evaluates the password and classifies it as:

- Weak
- Medium
- Strong

## **Second: Problem Description:**

This program helps users know whether their password is secure or not by checking:

- If it contains digits

- If it contains symbols
- If it has sufficient length
- If it contains uppercase letters

### Third: OOP Concepts Used:

#### 1 - Class

We created a class called: **class Pass**

#### 2 - Encapsulation

The password value is stored as: **private String value;**

#### 3 – Constructor

**public Pass (String value)** => Used to initialize the password when the object is created.

#### 4- Methods

The class contains the following methods:

- 1- **hasDigit()** => Checks if password contains at least one number
- 2- **HasSymbol()** => Checks if password contains symbol
- 3- **longLength()** => Checks if length  $\geq 9$
- 4- **Strength ()**=> Returns Weak, Medium, or Strong

## How the Program Works:

1. The user enters a password.
2. An object of class pass is created.
3. The program checks 4 conditions.
4. Each satisfied condition increases the strength of the score.
5. The result is printed.

### - Strength Calculation Logic:

```
public String Strength(){  
    int st = 0 ;  
    if(hasDigit()) st++;  
    if(hasSymbol()) st++;  
    if(longLength()) st++;  
    if(UpperCase()) st++;  
    if (st <=2)  
        return "Weak";  
    else if (st == 3)  
        return "Medium";  
    else  
        return "Strong";  
}
```

- Sample Run:

```
PS D:\Assignment 1 software> & 'C:\Program Files\Java  
howCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Abd  
a2f340c165380a92b0e0d61e564e1c78\redhat.java\jdt_ws\As  
Enter password: 2222$$  
Password Strength: Weak  
PS D:\Assignment 1 software>
```

- Main function:

- Explanation :

- Taking the password input from the user.
- Creating an object of the Pass class.
- Calling validation methods like hasDigit() and hasSymbol().
- Printing whether the password is strong or weak.

```
public class Password {
    Run | Debug
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter password: ");
        String key = input.nextLine();
        Pass password = new Pass(key);

        System.out.println("Password Strength: " + password.Strength());
    }
}
```

- **Sources:**

- 1 - Oracle – Java Tutorials
- 2- YouTube by CodeRK channel
- 3- some practice on LeetCode

## -Advantages of the Project

- **Uses OOP**
- **Easy to understand**
- **Simple security checking logic**
- **Expandable for future improvements**

