CS261 LAB5

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Task 1: Write a method to check whether a string is a valid password. Note :

password must have at least ten characters.

password consists of only letters and digits.

password must contain at least two digits.

Solution Code:

```
import java.util.Scanner;

public class validpwd {
    public static boolean Valid_Pwd(String PWD) {
        if (PWD.length() < 10){                          //checking 1st condition of pwd having >10 characters
            return false;
        }

        int nCount = 0;
        for (int i = 0; i < PWD.length(); i++) {
            char C = PWD.charAt(i);

            if (is_Numeric(C)){                         //checking chracters, if there is  a digit then counting
                nCount++;                               //it
            }else if (is_Letter(C))                     //if character is letter the continuing else false
            continue;
            else{
                return false;
            }
        }
        return ( nCount >= 2);                           //as per 3rd condition returning only if digit
    }                                                    //count>=2
    public static boolean is_Numeric(char C) {           //method for checking a character is numeric or not

        return (C >= '0' && C <= '9');
    }
```

```java
    public static boolean is_Letter(char ch) {
        ch = Character.toUpperCase(ch);
        return (ch >= 'A' && ch <= 'Z');
    }
    Run | Debug
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);                    //initializing scan
        System.out.print(
            "Input a PWD following the above Terms and Conditions.):\n "+
                "1. A PWD must have at least ten characters.\n" +
                "2. A PWD consists of only letters and digits.\n" +
                "3. A PWD must contain at least two digits \n");
        System.out.println(x: "Type a password:");
        String s = sc.nextLine();                                //taking password input

        if (Valid_Pwd(s)) {                                      // print ing the result after validating the
            System.out.println("Password is valid: " + s);       //password using the method Valid_Pwd
        } else {
            System.out.println("Not a valid PWD: " + s);
        }
        sc.close();
    }
}
```

Output:

```
PS D:\Java\OOPCS261> cd "d:\Java\OOPCS261\" ; if ($?) { javac validpwd.java } ; if ($?) { java validpwd }
Input a PWD following the above Terms and Conditions.):
 1. A PWD must have at least ten characters.
2. A PWD consists of only letters and digits.
3. A PWD must contain at least two digits
Type a password:
qwertyuyh456
Password is valid: qwertyuyh456
```

```
PS D:\Java\OOPCS261> cd "d:\Java\OOPCS261\" ; if ($?) { javac validpwd.java } ; if ($?) { java validpwd }
Input a PWD following the above Terms and Conditions.):
 1. A PWD must have at least ten characters.
2. A PWD consists of only letters and digits.
3. A PWD must contain at least two digits
Type a password:
ertfgh@#897ty
Not a valid PWD: ertfgh@#897ty
```

```
PS D:\Java\OOPCS261> cd "d:\Java\OOPCS261\" ; if ($?) { javac validpwd.java } ; if ($?) { java validpwd }
Input a PWD following the above Terms and Conditions.):
 1. A PWD must have at least ten characters.
2. A PWD consists of only letters and digits.
3. A PWD must contain at least two digits
Type a password:
34879564231
Password is valid: 34879564231
```

Task 2: Print the sum, difference and product of two complex numbers by creating a class named 'Complex' with separate methods for each operation. (take user input).

Solution Code:

```java
import java.util.*;

class Complex{
    void sum(int a, int b, int c, int d){
        System.out.println(x: "Sum ->");
        System.out.println((a+c)+"+"+"i"+(b+d));              //addition for complex no.- (a+c)+i(b+d)
    }
    void difference(int a, int b, int c, int d){
        System.out.println(x: "Difference ->");
        System.out.println((a-c)+"+"+"i"+"("+(b-d)+")");        //difference for complex no.- (a-c)+i(b-d)
    }
    void Product(int a, int b, int c, int d){
        System.out.println(x: "Product ->");
        System.out.println((a*c-b*d)+"+"+"i"+(c*b + a*d));      //product for complex no.- (ac-bd)+i(ad+cb)
    }
}
```

```java
public class cmplxcalc {

    Run | Debug
    public static void main(String[] args){
        Scanner sc= new Scanner(System.in);
        //Taking inputs
        System.out.println(x: "Enter real part of 1st number->");
        int a= sc.nextInt();
        System.out.println(x: "Enter imaginary part of 1st number->");
        int b= sc.nextInt();
        System.out.println(x: "Enter real part of 2nd number->");
        int c= sc.nextInt();
        System.out.println(x: "Enter imaginary part of 2nd number->");
        int d= sc.nextInt();
        Complex obj= new Complex();                             //creating object to call our class
        //calling class functions
        obj.sum(a,b,c,d);
        obj.difference(a,b,c,d);
        obj.Product(a,b,c,d);
        sc.close();
    }
}
```

Output:

```
PS D:\Java\OOPCS261> cd "d:\Java\OOPCS261\" ; if ($?) { javac cmplxcalc.java } ; if ($?) { java cmplxcalc }
Enter real part of 1st number->
2
Enter imaginary part of 1st number->
3
Enter real part of 2nd number->
4
Enter imaginary part of 2nd number->
5
Sum ->
6+i8
Difference ->
-2+i(-2)
Product ->
-7+i22
```