

Experiment No. 4

Aim_: A web application has a class User to represent basic user's information like username, password, mobile number, isActive, gender, Manager and created date and a method printUser() which prints the basic information in a specific format that should not be changed by the inheriting classes.

There are two types of Users viz. Standard user and custom user. A standard user has additional fields like alias, last login and role whereas a custom user has fields like email and Security Key. Use the inheritance feature of OOP to implement this system (use super, final, constructors, etc. as required). Define methods to display appropriate information based on the user type.

Create an array of users and display information of all users based on following criteria:

- i) Display all female standard users
- ii) Display all custom users created before 1 Jan 2000 with email Id containing "gmail.com".

Code :

User.java

```
import java.time.*;

public class User {
    String userName;
    private String password;
    String mobileNumber;
    boolean isActive;
    String gender;
    LocalDate createdDate;
    User manager;

    User() {
    }

    User(String userName, String password, String mobileNumber, boolean
isActive, String gender, User manager) {

        this.userName = userName;
        this.password = password;
        this.mobileNumber = mobileNumber;
        this.isActive = isActive;
        this.gender = gender;
        this.createdDate = LocalDate.now();
        this.manager = manager;
    }
}
```

Date : 17-06-2023

```
    final void printUser(){
        System.out.println("Name : " + userName + "\nMobile Number : " +
mobileNumber + "\nGender : " + gender + "\nCreated Date : " + createdDate);
    }

    private String getpassword(){
        return password;
    }
}
```

StandardUser.java

```
import java.time.*;

public class StandardUser extends User {
    String alias;
    LocalDateTime lastLogin;
    String role;

    StandardUser() {
    }

    StandardUser(String userName, String password, String mobileNumber,
boolean isActive, String gender, User manager,
        String alias, LocalDateTime lastLogin, String role) {
        super(userName, password, mobileNumber, isActive, gender, manager);
        this.alias = alias;
        this.lastLogin = lastLogin;
        this.role = role;
    }

    void printStandardUser() {
        super.printUser();
        System.out.println("Alias : " + alias + "\nLast Login : " + lastLogin
+ "\nRole : " + role + "\n");
    }
}
```

CustomUser.java

```
public class CustomUser extends User {
    String email, securitykey;
```

Date : 17-06-2023

```
CustomUser() {  
}  
  
CustomUser(String userName, String password, String mobileNumber, boolean  
isActive, String gender, User manager,  
String email, String securitykey) {  
    super(userName, password, mobileNumber, isActive, gender, manager);  
  
    this.email = email;  
    this.securitykey = securitykey;  
}  
  
void printCustomUser() {  
    super.printUser();  
    System.out.println("Email : " + email);  
}  
}
```

Test.java (Main Method)

```
import java.time.*;  
  
public class Test {  
    public static void main(String[] args) {  
  
        User user[] = new User[5];  
        boolean isThere = false;  
  
        user[0] = new StandardUser("Sujal1", "Sujal@123",  
"7499304141", true, "male", null, "suju",  
        LocalDateTime.of(2023, 06, 18, 12, 30, 30),  
"Software Engineer");  
        user[1] = new StandardUser("Sarita", "stdsarita@123",  
"9685746352", true, "male", user[0], "suju",  
        LocalDateTime.of(2023, 06, 18, 12, 30, 30),  
"Software Engineer");  
        user[2] = new StandardUser("Kavita", "stdkavita@567",  
"9876543210", true, "male", user[1], "suju",  
        LocalDateTime.of(2023, 06, 18, 12, 30, 30),  
"Software Engineer");  
        user[3] = new CustomUser("Alice", "custPass123", "986666666",  
true, "female", user[2],  
        "sujal@gmail.com",  
        "12345");  
        user[4] = new CustomUser("carol", "custpw123", "985410636",  
true, "male", user[3], "sujal@gmail.com",
```

```
        "12345");

        // print only female User of StandardUser
        // System.out.println("Female Standard Users:
        // \n=====");
        for (User u : user) {
            if (u instanceof StandardUser &&
u.gender.equalsIgnoreCase("female")) {
                StandardUser su = (StandardUser) u;
                su.printUser();
                isThere = true;
            }
        }

        user[4].createdDate = LocalDate.of(2000, 12, 31);
        user[3].createdDate = LocalDate.of(2000, 12, 31);

        // print only user which created date is before 1 jan 2000 and
also whose email
        /// contains gmail.com
        System.out.println(
            "Custom Users Created before 1 Jan 2000 with
gmail Accounts : \n=====");
        for (User u : user) {
            if (!(u instanceof StandardUser)) {
                CustomUser cu = (CustomUser) u;
                if (u.createdDate.isBefore(LocalDate.of(2000,
1, 1))
                    &&
cu.email.contains("gmail.com")) {
                    cu.printUser();
                    isThere = true;
                }
            }
        }

        if (isThere == false) {
            System.out.println("NO RECORDS FOUND!");
        }
    }
}
```

Date : 17-06-2023

Output :

Create an array of users and display information of all users based on following criteria.

```
public class Test {  
    Run | Debug  
    public static void main(String[] args) {  
  
        User user[] = new User[5];  
  
        user[0] = new StandardUser(userName:"Sujal1", password:"Sujal@123", mobileNumber:"7499304141", isActive:true, gender:"male", manager:null, alias:"suju",  
            LocalDateTime.of(year:2023, month:06, dayOfMonth:18, hour:12, minute:30, second:30), role:"Software Engineer");  
        user[1] = new StandardUser(userName:"Gwen", password:"Sujal@123", mobileNumber:"7499304141", isActive:true, gender:"female", user[0], alias:"suju",  
            LocalDateTime.of(year:2023, month:06, dayOfMonth:18, hour:12, minute:30, second:30), role:"Software Engineer");  
        user[2] = new StandardUser(userName:"Sujal2", password:"Sujal@123", mobileNumber:"7499304141", isActive:false, gender:"male", user[1], alias:"suju",  
            LocalDateTime.of(year:2023, month:06, dayOfMonth:18, hour:12, minute:30, second:30), role:"Software Engineer");  
        user[3] = new CustomUser(userName:"Shizuka", password:"Sujal@123", mobileNumber:"7499304141", isActive:true, gender:"female", user[2], email:"sujal@gmail.com",  
            securitykey:"12345");  
        user[4] = new CustomUser(userName:"Sujal3", password:"Sujal@123", mobileNumber:"7499304141", isActive:true, gender:"male", user[3], email:"sujal@gmail.com",  
            securitykey:"12345");  
    }  
}
```

i) Display all female standard users

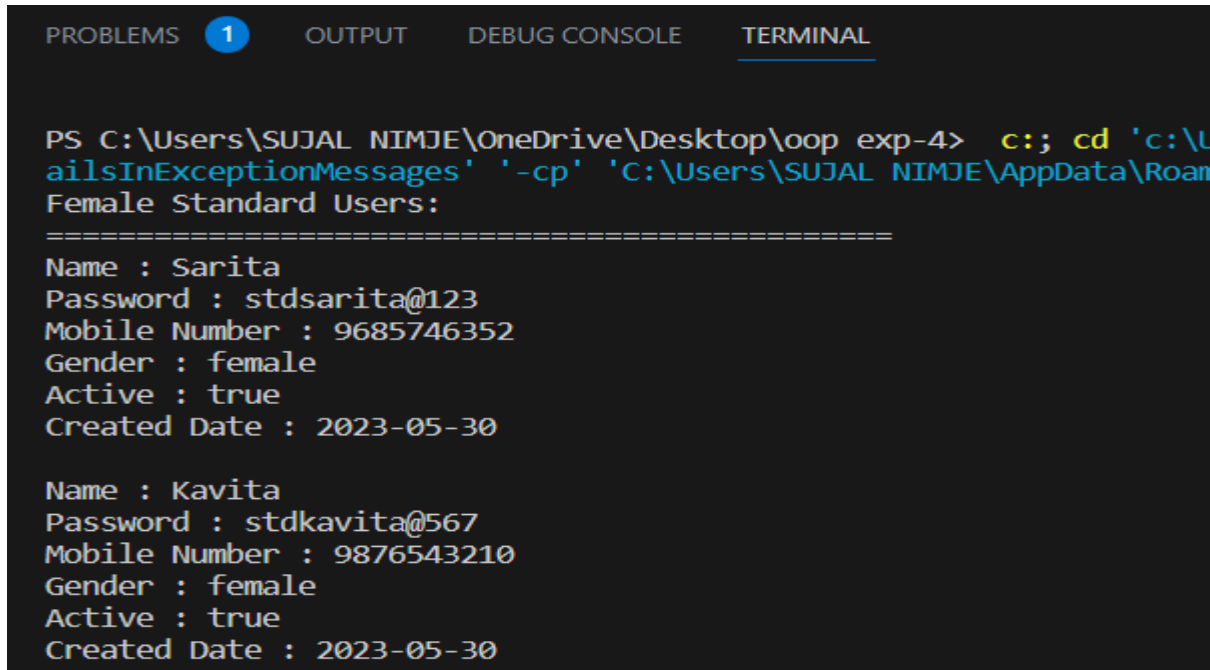
```
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL  
  
Email : sujal@gmail.com > c::; cd  
ailsInExceptionMessages' '-cp' 'C:\Users\SUJAL NIMJE\AppData  
Name : Gwen  
Mobile Number : 7499304141  
Gender : female  
Created Date : 2023-06-17  
Alias : suju  
Last Login : 2023-06-18T12:30:30  
Role : Software Engineer  
PS C:\Users\SUJAL NIMJE\OneDrive\Desktop\oop exp-4>
```

ii) Display all custom users created before 1 Jan 2000 with email Id containing "gmail.com".

```
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL  
  
Windows PowerShell  
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Install the latest PowerShell for new features and improvements! http  
  
PS C:\Users\SUJAL NIMJE\OneDrive\Desktop\oop exp-4> & 'C:\Program F  
ta\Roaming\Code\User\workspaceStorage\0f3af5a136ed24c54d7adaae6853f8  
  
Name : Sujal3  
Mobile Number : 7499304141  
Gender : male  
Created Date : 1999-12-31  
Email : sujal@gmail.com  
PS C:\Users\SUJAL NIMJE\OneDrive\Desktop\oop exp-4>
```

Test Cases :

- 1) When the array contains 2 objects of female standard user



```
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL

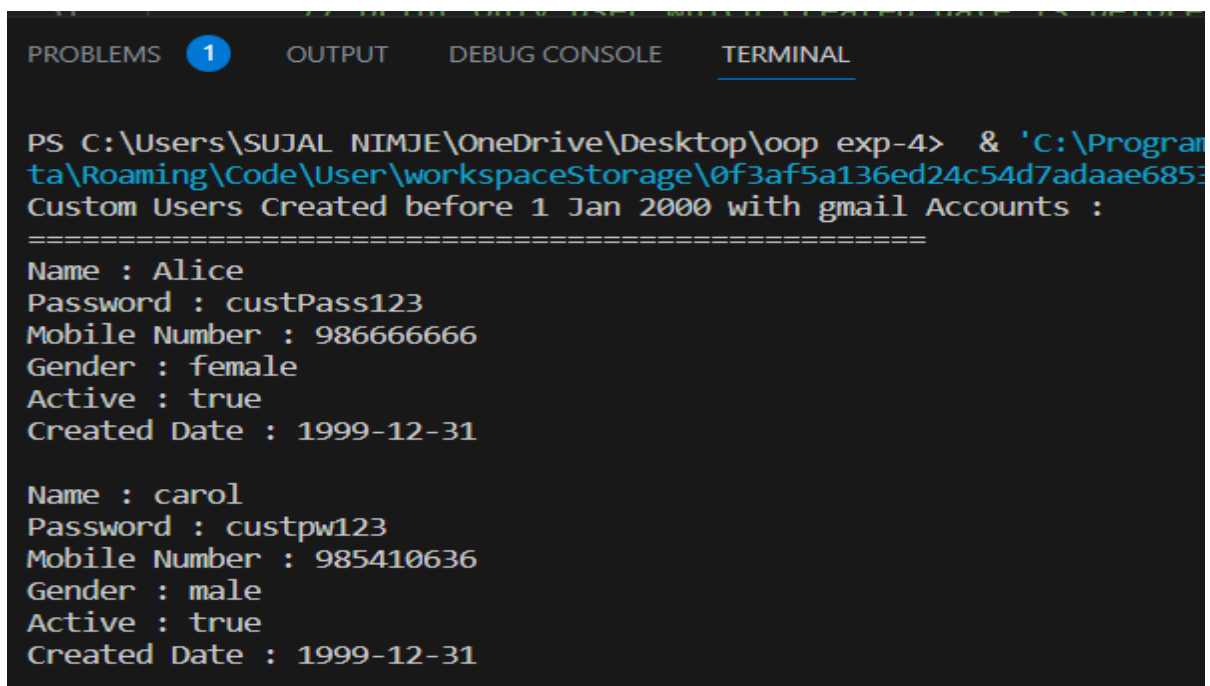
PS C:\Users\SUJAL NIMJE\OneDrive\Desktop\oop exp-4> c:; cd 'c:\Users\SUJAL NIMJE\AppData\Roaming\Code\User\workspaceStorage\0f3af5a136ed24c54d7adaae6853...'
Female Standard Users:
=====
Name : Sarita
Password : stdsarita@123
Mobile Number : 9685746352
Gender : female
Active : true
Created Date : 2023-05-30

Name : Kavita
Password : stdkavita@567
Mobile Number : 9876543210
Gender : female
Active : true
Created Date : 2023-05-30
```

- 2) When Overriding printUser() method of base class User

⇒ Overriden method is final

- 3) When the array contains two objects of Custom User with gmail account created before 1 Jan 2000

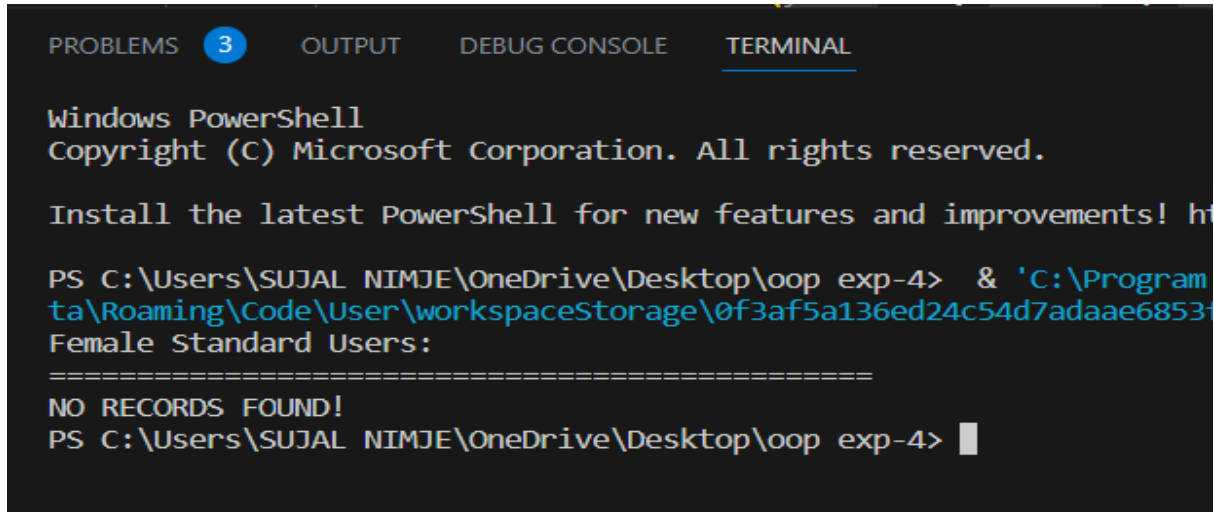


```
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL

PS C:\Users\SUJAL NIMJE\OneDrive\Desktop\oop exp-4> & 'C:\ProgramData\Roaming\Code\User\workspaceStorage\0f3af5a136ed24c54d7adaae6853...'
Custom Users Created before 1 Jan 2000 with gmail Accounts :
=====
Name : Alice
Password : custPass123
Mobile Number : 986666666
Gender : female
Active : true
Created Date : 1999-12-31

Name : carol
Password : custpw123
Mobile Number : 985410636
Gender : male
Active : true
Created Date : 1999-12-31
```

4) when the array does not contain any object of female Standard User



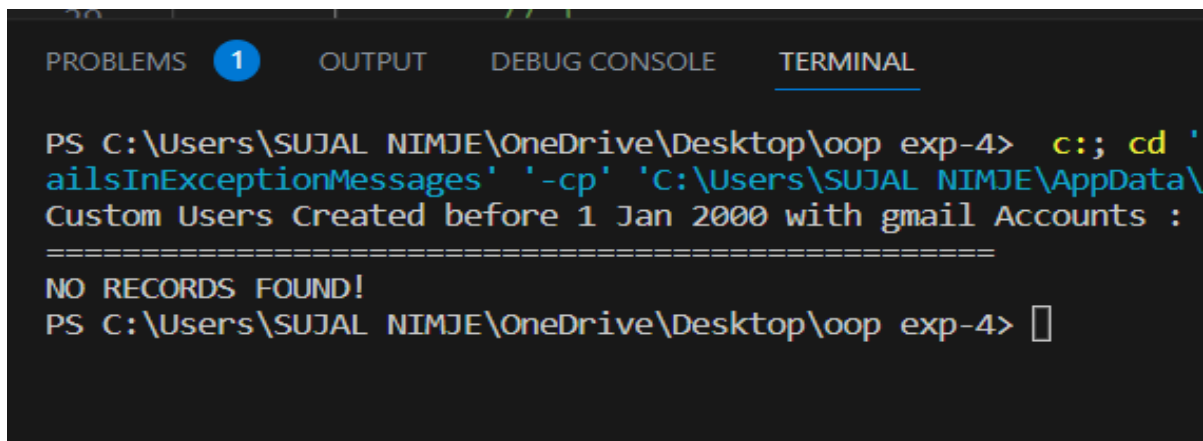
```
PROBLEMS 3 OUTPUT DEBUG CONSOLE TERMINAL

Windows PowerShell
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PS C:\Users\SUJAL NIMJE\OneDrive\Desktop\oop exp-4> & 'C:\ProgramData\Roaming\Code\User\workspaceStorage\0f3af5a136ed24c54d7adaae6853f\'.\Scripts\FindUsers.ps1 -f 'Female Standard Users:'
=====
NO RECORDS FOUND!
PS C:\Users\SUJAL NIMJE\OneDrive\Desktop\oop exp-4> █
```

5) when the array does not contain any object of Custom User with gmail account or created date before 1 Jan 2000



```
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL

PS C:\Users\SUJAL NIMJE\OneDrive\Desktop\oop exp-4> c:; cd 'C:\Users\SUJAL NIMJE\AppData\Local\Microsoft\Windows\CurrentVersion\Explorer\RecentItems\'; .\Scripts\FindUsers.ps1 -f 'Custom Users Created before 1 Jan 2000 with gmail Accounts : '
=====
NO RECORDS FOUND!
PS C:\Users\SUJAL NIMJE\OneDrive\Desktop\oop exp-4> █
```