



Lab Exercise – 4

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1. Define a class of student, the student have name, roll number, address and Phone Number. All attributes are public in access.

Create an object of Student "Student1" with default values. Print the all information of Student1.

Output:

```
D:\Sem122\CS102\JProg\ClassPPTPrograms>java StudentApp
Student Name = null
Student Id = 0
Student Address = null
Student Phone Number = 0
```

2. Rewrite your Lab exercise1 and initialize the fields of class student with the values given below.
name = Your name, rollNumber = your Id, address = Your address, phoneNumber = Your phone number

Write a test application named StudentTest and create student1 object. Print all information about student1 then ask from a user that he want to changes the values of object attributes if user gives yes (0 means yes) take input for all attributes and print the new values of attributes.

Output:

```
D:\Sem122\CS102\JProg\ClassPPTPrograms>java Student2App
Student Name = Ahmed
Student Id = 100
Student Address = Yanbu
Phone Number = 1000
You want to change the values (Y/N) :: y
Enter student name :: Mohammed
Enter student id :: 20101
Enter student address :: YUC
Enter student phone number :: 1234444
Student Name = Mohammed
Student Id = 20101
Student Address = YUC
Phone Number = 1234444
You want to change the values (Y/N) :: n
```

3. Create a class called Employee that includes three pieces of information as instance variables—a first name (type String), a last name (type String) and a monthly salary (double). Initializes the three instance variables with some values. Write a check salary method which checks the monthly salary if the monthly salary is not positive, set it to 0.0.

Write a test application named EmployeeTest that demonstrates class Employee's capabilities. Create two Employee objects and display each object's yearly salary and give each Employee a 10% raise and display each Employee's yearly salary again.

Output:

```
D:\Sem122\CS102\JProg\ClassPPTPrograms>java EmployeeTest
Employee 1: Mohammed Ali; Yearly Salary: 34500.00
Employee 2: Ahmed Mohammed; Yearly Salary: 37809.00
Employee 3: Rasheed Mohammed; Yearly Salary: 0.00

Increasing employee salaries by 10%
Employee 1: Mohammed Ali; Yearly Salary: 37950.00
Employee 2: Ahmed Mohammed; Yearly Salary: 41589.90
Employee 3: Rasheed Mohammed; Yearly Salary: 0.00
```

4. Create a class called Date that includes three pieces of information as instance variables—a month (type int), a day (type int) and a year (type int). Initializes the three instance variables and assumes that the values provided are correct. Provide a set and a get method for each instance variable. Provide a method displayDate that displays the month, day and year separated by forward slashes (/).

Write a test application named DateTest that demonstrates class Date's

Output:

```
D:\Sem122\CS102\JProg\ClassPPTPrograms>java DateTest
Enter day :: 23
Enter month :: 11
Enter Year :: 1978

Date = 23/11/1978
D:\Sem122\CS102\JProg\ClassPPTPrograms>java DateTest
Enter day :: 35
Enter month :: 18
Enter Year :: 1900

Invalid day
Invalid month
Date = 1/1/1900
```

5. Create a class named Account that includes one instance variable – balance (Type double). Provide a constructor that initializes the balance, if the balance is less than 0.0 make the balance to zero or else assign balance. Add a two methods credit and getBalance. The credit method receives one parameter amount (Type double) that will add to the balance. The getBalance method returns balance of a particular Account's object's balance. Write a test application named AccountTest that demonstrates class Account's capabilities. Create two Account objects and display the balance in each Account.

Output:

```
D:\Sem122\CS102\JProg\ClassPPTPrograms>java AccountApp
Account1 balance = 120.00
Account1 balance = 0.00
Enter deposit amount for account1: 567

Adding 567.00 to account1 balance

Account1 Balance : 687.00
Enter deposit amount for account2: 89

Adding 89.00 to account2 balance

Account2 Balance : 89.00
```

6. Modify class Account to provide a method called debit that withdraws money from an account. Ensure that the debit amount does not exceed the Account's balance. If it does, the balance should be left unchanged and the method should print a message indicating "Debit amount exceeded account balance."

Modify class AccountTest to test method debit.

Output:

```
D:\Sem122\CS102\JProg\ClassPPTPrograms>java Account2App
account1 balance: SR150.00
account2 balance: SR0.00

Enter withdrawal amount for account1: 34

subtracting SR34.00 from account1 balance
account1 balance: SR116.00
Enter withdrawal amount for account2: 89

subtracting SR89.00 from account2 balance
Debit amount exceeded account balance.
account2 balance: SR0.00
```

7. Write a program to calculate the area and circumference of a circle by writing Class circle and provide set and get methods to the instance variable. Create object for the Circle.

Output:

```
D:\Sem122\CS102\JProg\ClassPPTPrograms>java CircleApp
Give Radius :: 6
226.08 is the area of circle
37.68 is the circumference of circle
```