# PRESIDENCY UNIVERSITY

**(Established under the Presidency University Act, 2013 of the Karnataka Act 41 of 2013)**

## CSE1001 – Problem Solving Using JAVA

## LAB SHEET – 2

**Module: 2:** Classes, objects, methods and Constructors

Solution to Class Activity.

**Scenario**. Mr. John has joined a Company as Database Administrator and his major role is to maintain the Employee database which includes **Employee Id, Name, Age and Salary**.

**Q1**: He has given a freedom to read/store the data in the database as shown below:

1. Read all the data by taking values from the user.
2. Read only Employee Id from the user and store some default values as he likes to name, age and Salary.
3. Read Employee Id and Name from the user and store some default values as he likes to age and Salary.

**Q2**: He also been constrained to generate some default values to the Employee data fields before adding employee records to the database in the following fashion:

1. With default values as Id=123, Name="Presi", Age=25 and Salary=20000.00.
2. With default values taken from user as parameters.
3. By copying already created employee record.

**Q3**: Use this keyword

**Q4**: Display the "total salary expenditure" required for all the employees of the company in a month (Use static keyword).

Help Mr. John to store the records and retrieve all the records which he has stored.

Solution:

```
class Employee{
        String Id, Name;
        int Age;
        float Salary;
        static float totalsalary;
```

```
Scanner input=new Scanner(System.in);

void read(){
        System.out.println(“enter the employee Name, Id, Age and Salary”);
        Id=input.nextLine();
        Name=input.nextLine();
        Age=input.nextInt();
        Salary=next.Float();
        totalsalary+= Salary;
}
void read(String Id){
        this.Id=Id;
        System.out.println(“enter the employee Name, Age and Salary”);
        Name=input.nextLine();
        Age=input.nextInt();
        Salary=next.Float();
        totalsalary+= Salary;
}
void read(String Id, String Name){
        this.Id=Id;
        this.Name=Name;
        System.out.println(“enter the employee Age and Salary”);
        Age=input.nextInt();
        Salary=next.Float();
        totalsalary+= Salary;
}
Employee(){
        Id=”123”;
        Name=”Presi”;
        Age=25;
        Salary=20000.00;
        totalsalary+= Salary;
}
```

```
        Employee(String Id, String Name, int Age, float Salary){
                this.Id=Id;
                this.Name=Name;
                this.Age=Age;
                this.Salary=Salary;
                totalsalary+= Salary;
        }
        Employee(Employee emp){
                Id=emp.Id;
                Name=emp.Name;
                Age=emp.Age;
                Salary=emp.Salary;
                totalsalary+= Salary;
        }
        void Display()
        {
                System.out.println("Employee Details are:")
                System.out.println("Name=  "+Name+"\nId=  "+Id+"\nAge=  "+Age+"\nSalary=
                "+Salary )
                System.out.println("Total Salary Expenditure = "+totalsalaryary);
        }
}
class Demo{
        public static void main(string args[]){
                Employee emp1=new Employee("243","Presidency",20,10000.00f);
                Employee emp2=new Employee();
                //Employee emp3=new Employee();
                //emp3.read();
                emp1.Display();
                emp2.Display();
                //emp3.Display();
        }
}
```

# LAB EXCERCIES

1. A teacher asked the class leader to prepare the list of student details (name, Roll number, Branch and Sem) of his section by using read method and also to display the details of the students using java program.

   Q1 Demonstrate the application by creating, reading and displaying the one student of the section using Command Line Arguments.

   Q2 Demonstrate the application by creating, reading and displaying the three students of the section using Scanner class.

   Q3 Demonstrate the same application using this keyword

Requirements:

   a) Create a Class called Student with given attributes(data fields)
   b) Add the Method called "void Read()" to read the values of the attributes of the class student
   c) Also Add the Method called "void Display()" to display the values read for the attributes of the class student.

2. Modify the program of question 1 using **default, Parameterized and Copy constructors** to apply Constructor overloading.

3. Assume our presidency university uses a common water tank to supply water to every block. Each time the water level of the tank reduces based on the usage of each block. The facility manger fills the tank thrice with 50litres each time when request arrives. D block uses 20litres, E Block uses 40 liters and so on. Display the current water level in the tank each time when the blocks are raised their usage and decide when to call the facility manager to fill the tank.

4. An interviewer asked a job seeker to find the smaller of two numbers when numbers are integer and also when the numbers are real (float numbers) by applying overloading and static context in the program and finally display the output. Think you as a job seeker and solve the problem by satisfying the requirement given by the interviewer.

## Record Writing Self-Study

**Note: Solve the given scenario following the record instructions and submit the record on or before the due date.**

1. Create a class named 'Rectangle' with two data members- length and breadth and a method to calculate the area which is 'length*breadth'. The class has three constructors which are
   a) Having no parameter - values of both length and breadth are assigned zero.
   b) Having two numbers as parameters - the two numbers are assigned as length and breadth respectively.
   c) Having one number as parameter - both length and breadth are assigned that number.
   d) Now, create objects of the 'Rectangle' class having none, one and two parameters and print their areas

2. A teacher gave a project to student in the classroom to find the area of different shapes. A student has to find the area of different shapes based on the choice of different parameters like: area of the shape by passing one parameter, area of the shape by passing two parameters, area of the shape which has all sides are equal by passing one parameter using overloading and display the results.

3. Ravi went to super market to buy a set of items for his daily needs. Every time he fixed some amount as Rs.7000. He went to super market there he saw some different options to purchase. Use constructor overloading (default, one argument, two arguments).
   a) Combo offer which 25kg of rice bag, 10kg of sugar, 5kg of oil with fixed qty means total 40kgs quantity if items which costs 4000/-
   b) Another item which is having fixed quantity 25kgs but the price will be given by the shop owner.
   c) Shop Owner will give the quantity and it cost.

Requirements:

   a) Create a class named “Purchases” having two instance variables (quantity,price) and one method named “finalPrice” which displays how much balance he will have.
   b) Create a three objects and calculate the final balance.

4. Four employees decided to celebrate their manager’s birthday. Everyone contributed minimum of 500 rupees. Employee 1 and Employee 3 contributed the same amount. 25% of

amount is spent on cake, 25% of amount is spent on gift and 50% of money is spent on food. One of the employee explained the plan and action of the event by explaining the following to his/her team.

a) Every employee contribution and who has contributed the highest.

b) Amount spent on each item.

Help an employee by using constructor overloading, static variable and static function to demonstrate the same.

## RECORD WRITING INSTRUCTIONS

1. Solve the programming exercise using any IDE (Laptop / Mobile) or using any online compiler.
   A. Students can use online compiler or any preferable platform for the execution. Suggested is to use JDoodle. https://www.jdoodle.com/online-javacompiler/ Do test this site before your CA.
   B. Mobile users, kindly install JStudio - ide for java https://play.google.com/store/apps/details?id=com.qamar.ide.java&hl=en. This instruction is already given for solving your lab programs. If you haven't done, please do install, and test the app as soon as possible.
2. While solving your programming exercise, write the code in A4 sheet paper/record. While writing on the paper, please add these info. "Presidency University" "Department of CSE" "Odd semester 2021-2022" "MODULE - 2" "Course code : CSE 1001", Course name : PS Using JAVA, ID:_____, NAME:_____, SEC:_____, Date:_____
   A. While coding (the soft copy) & writing in the paper, all you're **CLASS NAME** and the **METHOD NAME** must be appended with your **LAST FOUR DIGIT** **student ID**. This is mandatory, even while WRITING in the paper.

**For example: If your Registration number is 20181COM0161 then**

```
class sample0161  {
        void Method0161(parameterlist)  {
                //method body
        }
}
```

B. Take a screenshot of **your program & the output** from your mobile/laptop.
C. Take a photo of the handwritten program.
D. Put together (**4. A,B,C**) , **combine as one pdf**, with the file name as your student **registration number(ex. 20181COM0161.pdf)**, and upload the file in Edhitch.
E. The document must be uploaded within the specified time in Edhitch.

Kindly follow the instructions very carefully so that your submission will be valid.