Object Oriented Programming
Lab Task 5

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Activity 1:

```
package LAB5;

class studentRecord {
    private String degree;

    public studentRecord() {
    }

    public void setDegree(String deg) {
        degree = deg;
    }

    public String getDegree() {
        return degree;
    }
}

class employeeRecord {
    private int emp_id;
    private double salary;

    public employeeRecord() {
    }

    public void setEmp_id(int id) {
        emp_id = id;
    }

    public int getEmp_id() {
        return emp_id;
    }

    public void setSalary(int sal) {
        salary = sal;
    }

    public double getSalary() {
        return salary;
    }
}

class Manager {
    private String title;
    private double dues;
```

```
    private employeeRecord emp;
    private studentRecord stu;

    public Manager(String t, double d, employeeRecord e, studentRecord s) {
        title = t;
        dues = d;
        emp = e;
        stu = s;
    }

    public void display() {
        System.out.println("Title is : " + title);
        System.out.println("Dues are : " + dues);
        System.out.println("Emplyoyee record is as under:");
        System.out.println("EmployeeId is : " +
                emp.getEmp_id());
        System.out.println("EmployeeId is : " + emp.getSalary());
        System.out.println("Student record is as under: ");
        System.out.println("Degree is : " + stu.getDegree());
    }
}

public class Runner {
    public static void main(String args[]) {
        studentRecord s = new studentRecord();
        s.setDegree("MBA");
        employeeRecord e = new employeeRecord();
        e.setEmp_id(1);
        e.setSalary(25000);
        Manager m1 = new Manager("financeManager", 5000, e, s);
        m1.display();
    }
}
```

Output:

```
PS D:\Ishtudy Material\3rd Sem\OOP\LA
2\bin\java.exe' '-XX:+ShowCodeDetails
Title is : financeManager
Dues are : 5000.0
Emplyoyee record is as under:
EmployeeId is : 1
EmployeeId is : 25000.0
Student record is as under:
Degree is : MBA
```

Activity 2:

```
package LAB5;

class Date {
    private int day;
    private int month;
    private int year;

    public Date(int theMonth, int theDay, int theYear) {
        day = checkday(theDay);
        month = checkmonth(theMonth);
        year = theYear;
    }

    private int checkmonth(int testMonth) {
        if (testMonth > 0 && testMonth <= 12) {
            return testMonth;
        } else {
            System.out.println("Invalid month " + testMonth + " set to 1");
            return 1;
        }
    }

    private int checkday(int testDay) {
        int daysofmonth[] = { 0, 31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30,
31 };
        if (testDay > 0 && testDay <= daysofmonth[month]) {
            return testDay;
        } else if (month == 2 && testDay == 29 &&
                (year % 400 == 0 || (year % 4 == 0 && year % 100 != 0))) {
            return testDay;
        } else {
            System.out.println("Invalid date " + testDay + " set to 1");
        }
        return 1;
```

```
    }

    public int getDay() {
        return day;
    }

    public int getMonth() {
        return month;
    }

    public int getYear() {
        return year;
    }

    public void display() {
        System.out.println(day + " " + month + " " + year);
    }
}

class employee {
    private String name;
    private String fname;
    private Date birthdate;
    private Date hiredate;

    employee() {
    }

    employee(String x, String y, Date birthofDate, Date dateofHire) {
        name = x;
        fname = y;
        birthdate = birthofDate;
        hiredate = dateofHire;
    }

    public void setname(String x) {
        name = x;
    }

    public String getname() {
        return name;
    }

    public void setfname(String x) {
        fname = x;
```

```
    }

    public String getfname() {
        return fname;
    }

    public void setbirthdate(Date b) {
        birthdate = b;
    }

    public Date getbirthdate() {
        return birthdate;
    }

    public void sethiredate(Date h) {
        hiredate = h;
    }

    public Date gethiredate() {
        return hiredate;
    }

    public void display() {
        System.out.println("Name: " + name + "  Father Name: " + fname);
        birthdate.display();
        hiredate.display();
    }
}

public class Runner1 {
    public static void main(String[] args) {
        Date b = new Date(1, 12, 1990);
        Date h = new Date(5, 6, 2016);
        employee e1 = new employee("xxx", "yyyy", b, h);
        e1.display();
    }
}
```

Output:

```
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\LabManual>  d:;
2\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessage
Invalid date 12 set to 1
Invalid date 6 set to 1
Name: xxx  Father Name: yyyy
1 1 1990
1 5 2016
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\LabManual>
```

Graded Lab Task 1:

```java
package LAB5;

import java.sql.PseudoColumnUsage;

class Adrress {
    private String street;
    private String city;
    private String house;
    private String code;

    public String getStreet() {
        return street;
    }

    public void setStreet(String street) {
        this.street = street;
    }

    public String getCity() {
        return city;
    }

    public void setCity(String city) {
        this.city = city;
    }

    public String getHouse() {
        return house;
    }

    public void setHouse(String house) {
        this.house = house;
    }
```

```
    public String getCode() {
        return code;
    }

    public void setCode(String code) {
        this.code = code;
    }

    public Adrress(String street, String city, String house, String code) {
        this.street = street;
        this.city = city;
        this.house = house;
        this.code = code;
    }

}

class Person {
    private String name;
    private String fname;
    private Adrress adrress;

    public Person(String name, String fname, Adrress adrress) {
        this.name = name;
        this.fname = fname;
        this.adrress = adrress;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getFname() {
        return fname;
    }

    public void setFname(String fname) {
        this.fname = fname;
    }

    public Adrress getAdrress() {
```

```
        return adrress;
    }

    public void setAdrress(Adrress adrress) {
        this.adrress = adrress;
    }

    void display() {
        System.out.println("Name: " + name);
        System.out.println("Father Name: " + fname);
        System.out.println("Street: " + adrress.getStreet());
        System.out.println("City: " + adrress.getCity());
        System.out.println("House: " + adrress.getHouse());
        System.out.println("Code: " + adrress.getCode());
    }
}

public class PersonRunner {
    public static void main(String[] args) {
        Adrress add1 = new Adrress("Street 5", "Islamabad", "B101", "44000");
        Person Hasaan = new Person("Hasaan Ahmad", "Mazhar Hussain", add1);
        Hasaan.display();
    }

}
```

Output:

```
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\LabManual>  d
2\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessa
Name: Hasaan Ahmad
Father Name: Mazhar Hussain
Street: Street 5
City: Islamabad
House: B101
Code: 44000
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\LabManual>
```

Graded Lab Task 2:

```
package LAB5;

class Book {
    private Person author;
    private String bookName;
    private String publisher;
```

```
    public Person getAuthor() {
        return author;
    }

    public void setAuthor(Person author) {
        this.author = author;
    }

    public String getBookName() {
        return bookName;
    }

    public void setBookName(String bookName) {
        this.bookName = bookName;
    }

    public String getPublisher() {
        return publisher;
    }

    public void setPublisher(String publisher) {
        this.publisher = publisher;
    }

    public Book(Person author, String bookName, String publisher) {
        this.author = author;
        this.bookName = bookName;
        this.publisher = publisher;
    }

    void display() {
        System.out.println("Book Name: " + bookName);
        System.out.println("Publisher: " + publisher);
        System.out.println("----------------Author's Information-------------
-----");
        System.out.println("Author Name: " + author.getName());
        System.out.println("Author Father Name: " + author.getFname());
        System.out.println("Author Address: " +
author.getAdrress().getStreet());
        System.out.println("Author Address: " +
author.getAdrress().getCity());
        System.out.println("Author Address: " +
author.getAdrress().getHouse());
```

```
        System.out.println("Author Address: " +
author.getAdrress().getCode());
    }

}

public class BookRunner {
    public static void main(String[] args) {
        Adrress adrress = new Adrress("Street 1", "Islamabad", "B202",
"40400");
        Person author = new Person("Hasaan Ahmad", "Mazhar Hussain",
adrress);
        Book book = new Book(author, "How to win People around you!", "Genius
Publishers");
        book.display();
    }
}
```

Output:

```
2\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages
Book Name: How to win People around you!
Publisher: Genius Publishers
----------------Author's Information------------------
Author Name: Hasaan Ahmad
Author Father Name: Mazhar Hussain
Author Address: Street 1
Author Address: Islamabad
Author Address: B202
Author Address: 40400
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\LabManual>
```

Graded Lab Task 3:

```
package LAB5;

class point {
    private double xCord;
    private double yCord;

    public double getxCord() {
        return xCord;
    }

    public void setxCord(double xCord) {
```

```
        this.xCord = xCord;
    }

    public double getyCord() {
        return yCord;
    }

    public void setyCord(double yCord) {
        this.yCord = yCord;
    }

    public point(double xCord, double yCord) {
        this.xCord = xCord;
        this.yCord = yCord;
    }

}

class Line {
    private point p1;
    private point p2;

    public point getP1() {
        return p1;
    }

    public void setP1(point p1) {
        this.p1 = p1;
    }

    public point getP2() {
        return p2;
    }

    public void setP2(point p2) {
        this.p2 = p2;
    }

    public Line(point p1, point p2) {
        this.p1 = p1;
        this.p2 = p2;
    }

    public double getLength() {
```

```
        return Math.sqrt(Math.pow((p2.getxCord() - p1.getxCord()), 2) +
Math.pow((p2.getyCord() - p1.getyCord()), 2));
    }

    void display() {
        System.out.println("Length of line is: " + getLength());
    }
}

public class PointRuner {
    public static void main(String[] args) {
        point p1 = new point(23.5, 12.4);
        point p2 = new point(45.4, 53.32);
        Line l1 = new Line(p1, p2);
        l1.display();
    }
}
```

Output:

```
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\La
2\bin\java.exe' '-XX:+ShowCodeDetailsInExc
Length of line is: 46.41181315139498
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\La
```

Graded Lab Task 4:

```
package LAB5;

class Pizza {
    private String size;
    private int cheeseToppings;
    private int pepperoniToppings;
    private int hamToppings;

    public Pizza(String size, int cheeseToppings, int pepperoniToppings, int
hamToppings) {
        this.size = size;
        this.cheeseToppings = cheeseToppings;
        this.pepperoniToppings = pepperoniToppings;
        this.hamToppings = hamToppings;
    }

    public String getSize() {
```

```
        return size;
    }

    public void setSize(String size) {
        this.size = size;
    }

    public int getCheeseToppings() {
        return cheeseToppings;
    }

    public void setCheeseToppings(int cheeseToppings) {
        this.cheeseToppings = cheeseToppings;
    }

    public int getPepperoniToppings() {
        return pepperoniToppings;
    }

    public void setPepperoniToppings(int pepperoniToppings) {
        this.pepperoniToppings = pepperoniToppings;
    }

    public int getHamToppings() {
        return hamToppings;
    }

    public void setHamToppings(int hamToppings) {
        this.hamToppings = hamToppings;
    }

    public double calcCost() {
        double cost = 0.0;

        if (size.equalsIgnoreCase("small")) {
            cost = 10 + (2 * (cheeseToppings + pepperoniToppings +
hamToppings));
        } else if (size.equalsIgnoreCase("medium")) {
            cost = 12 + (2 * (cheeseToppings + pepperoniToppings +
hamToppings));
        } else if (size.equalsIgnoreCase("large")) {
            cost = 14 + (2 * (cheeseToppings + pepperoniToppings +
hamToppings));
        }
```

```
        return cost;
    }

    public String getDescription() {
        return "Size: " + size + ", Cheese Toppings: " + cheeseToppings + ",
Pepperoni Toppings: " + pepperoniToppings
                + ", Ham Toppings: " + hamToppings;
    }
}

class PizzaOrder {
    private Pizza[] pizzas;
    private int numPizzas;

    public PizzaOrder() {
        pizzas = new Pizza[3];
        numPizzas = 0;
    }

    public void addPizza(Pizza pizza) {
        if (numPizzas < 3) {
            pizzas[numPizzas] = pizza;
            numPizzas++;
        } else {
            System.out.println("Maximum pizzas per order is 3.");
        }
    }

    public double calcTotal() {
        double totalCost = 0.0;

        for (int i = 0; i < numPizzas; i++) {
            totalCost += pizzas[i].calcCost();
        }

        return totalCost;
    }
}

public class PizzaRunner {
    public static void main(String[] args) {
        Pizza pizza1 = new Pizza("small", 1, 1, 1);
        Pizza pizza2 = new Pizza("medium", 2, 2, 2);
        Pizza pizza3 = new Pizza("large", 3, 3, 3);
```

```
        PizzaOrder order = new PizzaOrder();
        order.addPizza(pizza1);
        order.addPizza(pizza2);
        order.addPizza(pizza3);
        System.out.println(pizza1.getDescription());
        System.out.println("Cost: $" + pizza1.calcCost());
        System.out.println(pizza2.getDescription());
        System.out.println("Cost: $" + pizza2.calcCost());
        System.out.println(pizza3.getDescription());
        System.out.println("Cost: $" + pizza3.calcCost());

        System.out.println("Total cost: $" + order.calcTotal());
    }

}
```

Output:

```
2\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Ishtudy
Size: small, Cheese Toppings: 1, Pepperoni Toppings: 1, Ham Toppings: 1
Cost: $16.0
Size: medium, Cheese Toppings: 2, Pepperoni Toppings: 2, Ham Toppings: 2
Cost: $24.0
Size: large, Cheese Toppings: 3, Pepperoni Toppings: 3, Ham Toppings: 3
Cost: $32.0
Total cost: $72.0
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\LabManual>
```