UNIVERSITI TEKNOLOGI MARA

CSC186 – OBJECT ORIENTED PROGRAMMING

LAB ASSIGNMENT 2

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SOURCE CODE 1.1 : PROGRAM CLASS

```
public class Program {
    private String progCode;
    private String progDesc;
    private String duration;
    private String faculty;
    private String progHead;

    //default constructor
    public Program()
    {
        progCode = "";
        progDesc = "";
        duration = "";
        faculty = "";
        progHead = "";
    }

    //normal constructor
    public Program(String pc, String pd, String dr, String fc, String ph)
    {
        progCode = pc;
        progDesc = pd;
        duration = dr;
        faculty = fc;
        progHead = ph;
    }

    //copy constructor
    public Program(Program copyProgram)
    {
        this.progCode = copyProgram.progCode;
        this.progDesc = copyProgram.progDesc;
        this.duration = copyProgram.duration;
        this.faculty = copyProgram.faculty;
        this.progHead = copyProgram.progHead;
    }

    //setter
    public void setProgCode(String pc)
    {
        progCode = pc;
    }
```

```
    public void setProgDesc(String pd)
    {
        progDesc = pd;
    }

    public void setDuration(String dr)
    {
        duration = dr;
    }

    public void setFaculty(String fc)
    {
        faculty = fc;
    }

    public void setProgHead(String ph)
    {
        progHead = ph;
    }

    //getter
    public String getProgCode()
    {
        return progCode;
    }

    public String getProgDesc()
    {
        return progDesc;
    }

    public String getDuration()
    {
        return duration;
    }

    public String getFaculty()
    {
        return faculty;
    }

    public String getProgHead()
    {
        return progHead;
    }
```

```
    //processor
    public String programLevel()
    {
        char progCode = getProgCode().charAt(2);
        if(progCode=='0')
            return "Certificate";
        else if(progCode=='1')
            return "Diploma";
        else if(progCode=='2')
            return "Degree";
        else if(progCode=='7')
            return "Master";
        else if(progCode=='9')
            return "PhD";
        else
            return "Invalid Program Code.";
    }

    //printer
    public String toString()
    {
        return String.format("%nProgram Code: %s%nProgram
Description: %s%nProgram Level: %s%nDuration: %s%nFaculty: %s%nProgram
Head: %s%n", progCode, progDesc, programLevel(), duration, faculty,
progHead);
    }
}
```

SOURCE CODE 1.2 : LAND CLASS

```
public class Land {
    private String id;
    private String ownerName;
    private String houseType;
    private double area;

    //default constructor
    public Land()
    {
        id = "";
        ownerName = "";
        houseType = "";
        area = 0;
    }

    //normal constructor
    public Land(String id, String ownerName, String houseType, double
area)
    {
        this.id = id;
        this.ownerName = ownerName;
        this.houseType = houseType;
        this.area = area;
    }

    //copy constructor
    public Land(Land copyLand)
    {
        this.id = copyLand.id;
        this.ownerName = copyLand.ownerName;
        this.houseType = copyLand.houseType;
        this.area = copyLand.area;
    }

    //getter
    public String getId()
    {
        return this.houseType;
    }

    public String getOwnerName()
    {
        return this.ownerName;
    }
```

```
    public String getHouseType()
    {
        return this.houseType;
    }

    public double getArea()
    {
        return this.area;
    }

    //processor
    public double calcTaxPrice()
    {
        double taxRate = 0, taxPrice = 0; // RM-per-m^2
        switch (getHouseType().charAt(0)) {
            case 't':
            case 'T':
                taxRate = 10;
                break;
            case 's':
            case 'S':
                taxRate = 15;
                break;
            case 'b':
            case 'B':
                taxRate = 20;
                break;
            case 'c':
            case 'C':
                taxRate = 30;
                break;
            default:
                System.out.println("Invalid house type.");
                break;
        }
        taxPrice = taxRate*getArea();
        return taxPrice;
    }

    //printer
    public String toString()
    {
        return String.format("%nLand ID:\t%s%nOwner Name:\t%s%nHouse
Type:\t%s%nArea of land:\t%.2f m^2%nTax Price:\tRM%.2f%n", id, ownerName,
houseType, area, calcTaxPrice());
```

```
    }
}
```

SOURCE CODE 1.3 : MAIN CLASS

```
import java.util.Scanner;;

public class Main {

    public static void main(String[] args)
    {
        int choice = selectProgram();
        if(choice == 1 )
        {
            //instantiate an object
            Program p = new Program();

            //input data
            Scanner in = new Scanner(System.in);
            System.out.print("\nEnter program code: ");
            String pc = in.nextLine();
            System.out.print("Enter program description: ");
            String pd = in.nextLine();
            System.out.print("Enter duration: ");
            String dr = in.nextLine();
            System.out.print("Enter faculty: ");
            String fc = in.nextLine();
            System.out.print("Enter program head: ");
            String ph = in.nextLine();
            in.close();

            //store onto object
            //normal constructor
            p = new Program(pc, pd, dr, fc, ph);

            //OR
            //Setter
            p.setProgCode(pc);
            p.setProgDesc(pd);
            p.setDuration(dr);
            p.setFaculty(fc);
            p.setProgHead(ph);
```

```
            //manipulate data
            System.out.println(p.toString());
        }
        else if(choice == 2)
        {
            Land l = new Land();

            Scanner in = new Scanner(System.in);
            System.out.print("\nEnter land id: ");
            String id = in.nextLine();
            System.out.print("Enter owner name: ");
            String ownerName = in.nextLine();
                // capitalize each of the first letter of the owner name
                for (int i = 0; i < ownerName.length(); i++)
                {
                    if (i == 0) {
                        ownerName = ownerName.substring(0,
1).toUpperCase() + ownerName.substring(1);
                    } else if (ownerName.charAt(i) == ' ') {
                        ownerName = ownerName.substring(0, i + 1) +
ownerName.substring(i + 1, i + 2).toUpperCase()
                                + ownerName.substring(i + 2);
                    }
                }

            System.out.print("Enter house type [T,S,B,C]: ");
            String houseType = in.nextLine();
                switch (houseType.charAt(0)) {
                    case 't':
                    case 'T':
                        houseType = "Terrace";
                        break;
                    case 's':
                    case 'S':
                        houseType = "Semi-Detached";
                        break;
                    case 'b':
                    case 'B':
                        houseType = "Bungalow";
                        break;
                    case 'c':
                    case 'C':
                        houseType = "Condominium";
                        break;
                    default:
```

```
                        System.out.println("Invalid house type.");
                        System.exit(1);
                        break;
                }
            System.out.print("Enter area: ");
            double area = in.nextDouble();
            in.close();

            l = new Land(id, ownerName, houseType, area);

            System.out.println(l.toString());
        }
    }

    public static int selectProgram()
    {
        Scanner in = new Scanner(System.in);
        System.out.printf("%n1.University Program Level%n2.Land
details%n%nSelect program[1-2]: ");
        int choice = in.nextInt();
            if(choice != 1 && choice != 2)
            {
                System.out.println("Invalid choice.");
                System.exit(1);
            }
        return choice;
    }
}
```

SAMPLE INPUT (PROGRAM)

```
1.University Program Level
2.Land details

Select program[1-2]: 1

Enter program code: CS110
Enter program description: Computer Science
Enter duration: 2 years
Enter faculty: FSKM
Enter program head: Sir Alif
```

SAMPLE OUTPUT (PROGRAM)

```
Program Code: CS110
Program Description: Computer Science
Program Level: Diploma
Duration: 2 years
Faculty: FSKM
Program Head: Sir Alif
```

SAMPLE INPUT (LAND)

```
1.University Program Level
2.Land details

Select program[1-2]: 2

Enter land id: 128793
Enter owner name: Amir Haikal bin Amri
Enter house type [T,S,B,C]: t
Enter area: 120
```

SAMPLE OUTPUT (LAND)

```
Land ID:        128793
Owner Name:     Amir Haikal Bin Amri
House Type:     Terrace
Area of land:   120.00 m^2
Tax Price:      RM1200.00
```