EAST WEST UNIVERSITY

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LAB-05

SUBMITTED TO

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A)

```
import java.util.Scanner;

class Book
{
private int ISBN;
private String BookTitle;
private int NumberOfPages;
private int count;

public Book(int is, String bt, int np)
{
ISBN=is;
BookTitle=bt;
NumberOfPages=np;
}

public String toString()
{
return ISBN+" " +BookTitle+ " "+NumberOfPages;
}

void setISBM(int is)
{
ISBN=is;
}
int getISBM()
{
return ISBN;
}
```

```
void setBookTitle(String bt)
{
BookTitle=bt;
}
String setBookTitle()
{
return BookTitle;
}


void setNumberOfPages(int np)
{
NumberOfPages=np;
}
int getNumberOfPages()
{
return NumberOfPages;
}

int compareTo(Book I)
{
if (this.NumberOfPages > I.NumberOfPages)
{
return 1;
}
else if (this.NumberOfPages == I.NumberOfPages)
{
return 0;
}
else
{
return -1;
```

```
}
}

}



public class BookObjects
{
   public static void getCount(int n)
{
   System.out.println("The number of total books: "+n);
}

static Book[] ItemArray = new Book[10];

public static void main(String[] args)
{
Scanner in= new Scanner(System.in);
/*
Book book1 = new Book(10, "BD", 25);
Book book2 = new Book(20, "USA", 20);
System.out.println(book1);
System.out.println(book2);
System.out.println(book1.compareTo(book2));*/

System.out.println("How many info do you want to input: ");
int n = in.nextInt();

for (int i = 0; i < n; i++)
{
System.out.println("Book number: "+(i+1));
System.out.println("Enter ISBN:");
int is = in.nextInt();
```

```
System.out.println("Enter book title:");
in.nextLine();
String ic = in.nextLine();
System.out.println("Enter number of pages:");
int np = in.nextInt();
ItemArray[i] = new Book(is, ic, np);
System.out.println(ItemArray[i].toString());
}

System.out.println("\nIn total: ");
for (int i=0; i<n; i++)
{
System.out.println(ItemArray[i]);
}
getCount(n);
}
}
```

B)

```
import java.util.Scanner;
class Line
{
   double slope;
   private double x1,y1;

   private double x2,y2;
   public Line(double a, double b, double c, double d)
   {
      this.x1 = a;
      this.y1 = b;
```

```
    this.x2 = c;
    this.y2 = d;
}

public String toString()
{
    return "The points of the line are: "+"("+x1+","+y1+ ")"+" and "+"(" +x2+","+y2+")";
}

void setx1(double a)
{
   this.x1=a;
}
double getx1()
{
    return x1;
}

void sety1(double b)
{
    this.y1=b;
}
double gety1()
{
    return y1;
}

void setx2(double c)
{
    this.x2=c;
}
double getx2()
{
```

```
        return x2;
    }

    void sety2(double d)
    {
        this.y2=d;
    }
    double gety2()
    {
        return y2;
    }

    public double findSlope()
    {
        double y= gety2()-gety1();
        double x= getx2()-getx1();
        double slope=y/x;
        return slope;
    }
}



public class LineProject
{
    static Line[] line = new Line[4];
    static boolean isIntersecting(Line line1, Line line2)
    {
        if (line1.findSlope() == line2.findSlope())
        {
            return false;
        }
        else
        {
```

```
        return true;
    }
}


public static void main(String[] args)
{
    Scanner in = new Scanner(System.in);
    Line[] LineArray1 = new Line[4];
    Line[] LineArray2 = new Line[4];
    for (int i = 0; i<1; i++)
    {
        System.out.println("Enter the points for 1st coordinate:");
        System.out.println("Enter x1:");
        double a = in.nextInt();
        System.out.println("Enter y1:");
        double b = in.nextInt();
        System.out.println("Enter x2:");
        double c = in.nextInt();
        System.out.println("Enter y2:");
        double d = in.nextInt();
        LineArray1[i] = new Line(a,b,c,d);
        System.out.println(LineArray1[i].toString());
        System.out.println("");
    }


    for (int i=0; i<1; i++)
    {
        System.out.println("Enter the points for 2nd coordinate:");
        System.out.println("Enter x1:");
        double a = in.nextInt();
        System.out.println("Enter y1:");
```

```
            double b = in.nextInt();
            System.out.println("Enter x2:");
            double c = in.nextInt();
            System.out.println("Enter y2:");
            double d = in.nextInt();
            LineArray2[i] = new Line(a,b,c,d);
            System.out.println(LineArray2[i].toString());
            System.out.println("");
        }


        System.out.print("\nFor 1st coordinate ");
        for (int i=0; i<1; i++)
        {
            System.out.println(LineArray1[i]);
        }


        System.out.print("\nFor 2nd coordinate ");
        for (int i=0; i<1; i++)
        {
            System.out.println(LineArray2[i]);
            System.out.println("");
        }


        for (int i=0; i<1; i++)
        {
            System.out.println(isIntersecting(LineArray1[i], LineArray2[i]));
            System.out.println("");
        }
    }
}
```

C)

```
import java.util.Scanner;


class Student
{
   private int studentID;
   private String studentName;
   private double studentCGPA;


   public Student()
   {
   }
   public Student(int studentID, String studentName, double studentCGPA)
   {
      this.studentID = studentID;
      this.studentName = studentName;
      this.studentCGPA = studentCGPA;
   }
   public String toString()
   {
      return "The name of the student is: "+this.studentName+"Student ID: "+this.studentID+"Student
CGPA: "+this.studentCGPA;
   }
   public int getStudentID()
   {
      return this.studentID;
   }
   public void setStudentID(int studentID)
   {
```

```
        this.studentID=studentID;
    }
    public String getStudentName()
    {
        return studentName;
    }
    public void setStudentName(String studentName)
    {
        this.studentName=studentName;
    }
    public double getStudentCGPA()
    {
        return studentCGPA;
    }
    public void setStudentCGPA(double studentCGPA)
    {
        this.studentCGPA = studentCGPA;
    }
}
class Course {
    private String courseID;
    private String courseTitle;
    private double credit;
    private int numberOfStudents=0;
    private Faculty faculty;
    private Student [] studentList = new Student [1000] ;

    public Course() {}

    public Course(String courseID, String courseTitle, double credit)
    {
        this.courseID = courseID;
        this.courseTitle = courseTitle;
```

```
    this.credit = credit;
  }

  public String toString()
  {
    return "Course ID: " + this.courseID+"Course Title: " + this.courseTitle+"Course Credit: " +
this.credit+"Number of Students: " + this.numberOfStudents;
  }

  public void addStudent(Student s)
  {
    this.numberOfStudents += 1;
    this.studentList[this.numberOfStudents] = s;
    System.out.println("Student added!");
  }

  public void dropStudent(int studentID)
  {
    boolean dropped = false;
    for (int i = 0; i < this.numberOfStudents; i++)
    {
      if (this.studentList[i].getStudentID() == studentID)
      {
        Student[] temp = new Student[this.numberOfStudents - 1];

        for (int y = 0; y < this.numberOfStudents; y++)
        {
          if (y == i)
          {
            continue;
          }
          else
          {
```

```
                temp[y] = this.studentList[y];
            }
        }
        this.studentList = temp;

        System.out.println("Student with ID " + studentID + " successfully dropped!!");
        dropped = true;

        this.numberOfStudents = this.numberOfStudents - 1;

        break;
      }
   }

   if (dropped == false)
   {
      System.out.println("This student either does not exist or has already been deleted!");
   }
}

public void addFaculty(Faculty faculty)
{
   this.faculty=faculty;
}

public void dropFaculty()
{
   this.faculty = null;
}

public void printStudentList()
{
   for (int i = 0; i < this.numberOfStudents; i++)
```

```
    {
        System.out.println(this.studentList[i].toString());
        System.out.println();
    }
}

public String getCourseID()
{
    return courseID;
}

public void setCourseID(String courseID)
{
    this.courseID = courseID;
}

public String getCourseTitle()
{
    return courseTitle;
}

public void setCourseTitle(String courseTitle)
{
    this.courseTitle = courseTitle;
}

public double getCredit()
{
    return credit;
}

public void setCredit(double credit)
{
```

```
    this.credit = credit;
}

public Student[] getStudentList()
{
    return studentList;
}

public void setStudentList(Student[] studentList)
{
    this.studentList = studentList;
}

public int getNumberOfStudents()
{
    return numberOfStudents;
}

public void setNumberOfStudents(int numberOfStudents)
{
    this.numberOfStudents = numberOfStudents;
}

public Faculty getFaculty()
{
    return faculty;
}

public void setFaculty(Faculty faculty)
{
    this.faculty = faculty;
}
```

```
}

class Faculty
{
   private int facultyID;
   private String facultyName;
   private String facultyPosition;

   public Faculty() {}
   public Faculty(int facultyID, String facultyName, String facultyPosition)
   {
      this.facultyID = facultyID;
      this.facultyName = facultyName;
      this.facultyPosition = facultyPosition;
   }

   public String toString()
   {
      return "Faculty ID: " + this.facultyID+"Faculty Name: " + this.facultyName+"Faculty Position: " +
this.facultyPosition;
   }

   public int getFacultyID()
   {
      return facultyID;
   }

   public void setFacultyID(int facultyID)
   {
      this.facultyID = facultyID;
   }

   public String getFacultyName()
```

```
    {
        return facultyName;
    }

    public void setFacultyName(String facultyName)
    {
        this.facultyName = facultyName;
    }

    public String getFacultyPosition()
    {
        return facultyPosition;
    }

    public void setFacultyPosition(String facultyPosition)
    {
        this.facultyPosition = facultyPosition;
    }
}




public class VersityLife {
    static Scanner in= new Scanner(System.in);
    private static void menu(Course[] cr, int n)
    {
        System.out.println();
        System.out.println();
        System.out.println("1. Add");
        System.out.println("2. Delete");
        System.out.println("3. Update");
        System.out.println("4. Print");
```

```
    System.out.println("5. Search");
    System.out.println("Enter your choice: ");
    int c= in.nextInt();
    if(c==1)
    {
       Add(cr,n);
    }
    else if(c==2)
    {
       Delete(cr,n);
    }
    else if(c==3)
    {
       Update(cr,n);
    }
    else if(c==4)
    {
       Print(cr,n);
    }
    else
    {
       Search(cr,n);
    }
}


public static void Add(Course[]cr,int n)
{
    System.out.println("1. Add a student.");
    System.out.println("2. Add a faculty.");
    System.out.println("Enter your choice: ");
    int c=in.nextInt();
    System.out.println("Enter the course code: ");
```

```
String s= in.next();


int t = 0;
for(int i=0;i<n; i++)
{
   if(cr[i].getCourseID().equals(s))
   {
      t=1;
      if(c==1)
      {
         System.out.println();
         System.out.println("Enter the student id, name, cgpa: ");
         int id = in.nextInt();
         String name = in.next();
         double cgpa = in.nextDouble();
         Student tc = new Student(id, name, cgpa);
         cr[i].addStudent(tc);
      }
      else
      {
         System.out.println("\n");
         System.out.println("Enter the faculty id, name, place: ");
         int id = in.nextInt();
         String name = in.next();
         String plc = in.next();
         Faculty f = new Faculty(id, name, plc);
         cr[i].addFaculty(f);
      }
   }
}
if(t==0)
{
   System.out.println("Course not found.");
```

```
    }
    System.out.println("\n");
    menu(cr, n);
}

public static void Delete(Course[]cr,int n)
{
    System.out.println("1. Delete a course.");
    System.out.println("2. Delete a student.");
    System.out.println("3. Delete a faculty.");
    System.out.println("Enter your choice: ");
    int c=in.nextInt();
    System.out.println();
    System.out.println("Enter the course title to delete student/faculty/courses:");
    String scr=in.next();

    if(c==1)
    {
        int in = -1;
        for(int i=0; i<n; i++)
        {
            if(cr[i].getCourseID().equals(scr))
            {
                in = i;
            }
        }
        if(in!=-1)
        {
            for(int i=in; i<n-1; i++)
            {
                cr[i] = cr[i+1];
            }
        }
```

```
    }
    else if(c==2)
    {
        System.out.print("Which course student you want to delete? Enter the course code: ");
        String s = in.next();
        for(int i=0; i<n; i++)
        {
            if(cr[i].getCourseID().equals(s))
            {
                System.out.println("Enter the student id: ");
                int t = in.nextInt();
                for(int j=0; j<cr[i].getNumberOfStudents(); j++)
                {
                    if(cr[i].getStudentList()[j].getStudentID() == t)
                    {
                        cr[i].dropStudent(t);
                    }
                }
            }
        }
    }
    menu(cr, n);
}



public static void Update(Course cr[], int n)
{
    System.out.println("1. Update a student.");
    System.out.println("2. Update a course.");
    System.out.println("3. Update a faculty.");
    System.out.print("Enter your choice: ");
    int c = in.nextInt();
```

```
    System.out.println("\n");
    menu(cr, n);
}

public static void Print(Course cr[], int n)
{
    System.out.print("Which course student info you want to see? Enter the course code: ");
    String s = in.next();
    for(int i=0; i<n; i++)
    {
        if(cr[i].getCourseID().equals(s))
        {
            for(int j=0; j<cr[i].getNumberOfStudents(); j++)
            {
                System.out.println(cr[i].getStudentList()[i]);
            }
        }
    }
    menu(cr, n);
}

public static void Search(Course[] cr, int n)
{
    System.out.println("1. search a student.");
    System.out.println("2. search a course.");
    System.out.println("3. search a faculty.");
    System.out.print("Enter your choice: ");
    int c = in.nextInt();
    menu(cr, n);
}


public static void main(String[] args)
```

```
    {
        System.out.println("How many courses do we have:");
        int n = in.nextInt();
        Course[] cr = new Course[n];

        for (int i = 0; i < n; i++)
        {
            System.out.println("Enter the course id, title and credit: ");
            String s = in.next();
            String t = in.next();
            double d = in.nextDouble();
            cr[i] = new Course(s, t, d);
        }
        menu(cr, n);
    }
}
```