

**Course Title:** CSE110

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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);

}

}