

# Lab Assignment 07



Inspiring Excellence

Course Code:	CSE111
Course Title:	Programming Language II
Topic:	Array Manipulation and Inheritance Basics
Number of Tasks:	9

*[Submit all the Coding Tasks (Task 1 to 8) in the Google Form shared on buX before the next lab. Submit the Tracing Tasks (Task 9) handwritten to your Lab Instructors at the beginning of the lab]*

[You are not allowed to change the driver/given codes of any of the tasks]

## Task 1

Design the **BrowserHistory** class so that the given output is produced.

Driver Code	Output
<pre>public class BrowserHistoryTester {     public static void main(String[] args){         BrowserHistory chrome = new BrowserHistory(3);         System.out.println(chrome.count + " web pages visited.");         System.out.println("1=====");         chrome.showHistory();         System.out.println("2=====");         chrome.currentWeb();         System.out.println("3=====");         chrome.visitWeb("www.google.com");         chrome.visitWeb("www.facebook.com");         chrome.visitWeb("www.youtube.com");         chrome.visitWeb("www.reddit.com");         System.out.println("4=====");         System.out.println(chrome.count + " web pages visited.");         System.out.println("5=====");         chrome.showHistory();         System.out.println("6=====");         chrome.currentWeb();         System.out.println("7=====");         chrome.back();         System.out.println("8=====");         System.out.println(chrome.count + " web pages visited.");         System.out.println("9=====");         chrome.currentWeb();         System.out.println("10=====");         chrome.back();         System.out.println("11=====");         chrome.currentWeb();         System.out.println("12=====");         chrome.back();         System.out.println("13=====");         chrome.currentWeb();         System.out.println("14=====");         System.out.println(chrome.count + " web pages visited.");     } }</pre>	<pre>0 web pages visited. 1===== No web pages visited yet. 2===== You have not visited any website yet! 3===== Visited: www.google.com Visited: www.facebook.com Visited: www.youtube.com History is full. Cannot visit www.reddit.com web page. 4===== 3 web pages visited. 5===== Browser History: www.google.com www.facebook.com www.youtube.com 6===== Current web page: www.youtube.com 7===== 8===== 2 web pages visited. 9===== Current web page: www.facebook.com 10===== 11===== Current web page: www.google.com 12===== 13===== You have not visited any website yet! 14===== 0 web pages visited.</pre>

## Task 2

Design the **CustomerService** class so that the given output is produced.

Driver Code	Output
<pre>public class CustomerServiceTester {     public static void main(String[] args) {         CustomerService service = new CustomerService(3);         service.serveCustomer();         System.out.println("1=====");         service.addCustomer("Arthur");         service.addCustomer("Bruce");         service.addCustomer("Clark");         service.addCustomer("Kara");         System.out.println("2=====");         service.serveCustomer();         service.serveCustomer();         System.out.println("3=====");         service.addCustomer("Diana");         service.addCustomer("Victor");         service.addCustomer("Harley");         System.out.println("4=====");         service.serveCustomer();         service.serveCustomer();         service.serveCustomer();         service.serveCustomer();     } }</pre>	<pre>No customers to serve 1===== Added: Arthur Added: Bruce Added: Clark Queue is full. Cannot add Kara 2===== Serving Arthur Serving Bruce 3===== Added: Diana Added: Victor Queue is full. Cannot add Harley 4===== Serving Clark Serving Diana Serving Victor No customers to serve</pre>

### Task 3

Complete the class **Circle** so that the desired outputs are generated properly.

Given Code	Expected Output
<pre>public class shapeTester {     public static void main(String[] args) {         Shape s = new Shape();         s.name = "Mobius Strip";         s.color = "Blue";         s.displayInfo();         System.out.println("=====");         Circle c = new Circle();         System.out.println("=====");         c.name = "Circle";         c.color = "Red";         c.radius = 5;         c.displayInfo();         System.out.println("=====");         c.area();     } }  public class Shape {     public String name;     public String color;      public void displayInfo() {         System.out.printf("Name: %s\nColor: %s\n", name, color);     } }  public class Circle extends Shape {     //Your Code Here }</pre>	<pre>Name: Mobius Strip Color: Blue ===== Name: Circle Color: Red ===== Area of Red Circle: 78.54</pre>

## Task 4

Complete the class **Dog** so that the desired outputs are generated properly.

Given Code	Expected Output
<pre>public class AnimalTester{     public static void main(String args[]){         Animal a1 = new Animal();         System.out.println("1-----");         a1.details();         System.out.println("2-----");         Dog d1 = new Dog();         d1.name = "Pammy";         System.out.println("3-----");         System.out.println("Name: " + d1.getName());         d1.details();         System.out.println("4-----");         d1.updateSound("Bark");         System.out.println("5-----");         d1.details();     } }  public class Animal{     public int legs = 4;     public String sound = "Not defined";      public void details(){         System.out.println("Legs: "+legs);         System.out.println("Sound: "+sound);     } }  public class Dog extends Animal{     //Your Code Here }</pre>	<pre>1----- Legs: 4 Sound: Not defined 2----- The dog says hello! 3----- Name: Pammy Legs: 4 Sound: Not defined 4----- 5----- Legs: 4 Sound: Bark</pre>

## Task 5

Given the following classes, write the code for the **Cricket\_Tournament** and the **Tennis\_Tournament** classes derived from **Tournament** so that the following output is generated.

Given Code	Expected Output
<pre>public class Tester5 {     public static void main(String[] args) {         Cricket_Tournament ct1 = new Cricket_Tournament();         System.out.println(ct1.detail());         System.out.println("-----");          Cricket_Tournament ct2 = new Cricket_Tournament("IPL", 10,         "t20");         System.out.println(ct2.detail());         System.out.println("-----");          Tennis_Tournament tt = new Tennis_Tournament("Roland         Garros", 128);         System.out.println(tt.detail());     } }  public class Tournament {     private String name;     public Tournament() {         this.name = "Default";     }     public Tournament(String name) {         this.name = name;     }     public void setName(String name){         this.name = name;     }     public String getName(){         return this.name;     } }</pre>	<pre>Cricket Tournament Name: Default Number of Teams: 0 Type: No type ----- Cricket Tournament Name: IPL Number of Teams: 10 Type: t20 ----- Tennis Tournament Name: Roland Garros Number of Players: 128</pre>

## Task 6

Given the following classes, write the code for the **Book** and the **CD** class so that the following output is printed.

Given Code	Expected Output
<pre>public class Tester6 {     public static void main(String[] args) {         Book book = new Book(1, "The Alchemist", 500, "97806", "HarperCollins");         System.out.println(book.printDetail());         System.out.println("-----");          CD cd = new CD(2, "Shotto", 300, "Warfaze", 50, "Hard Rock");         System.out.println(cd.printDetail());     } }  class Product {     private int id;     private String title;     private int price;      public Product(int id, String title, int price) {         this.id = id;         this.title = title;         this.price = price;     }      public String getIdTitlePrice() {         return "ID: " + id + " Title: " + title + " Price: " + price;     } }</pre>	<pre>ID: 1 Title: The Alchemist Price: 500 ISBN: 97806 Publisher: HarperCollins ----- ID: 2 Title: Shotto Price: 300 Band: Warfaze Duration: 50 minutes Genre: Hard Rock</pre>

## Task 7

Given the following classes, write the code for the **CSEStudent** class derived from **Student** so that the following output is generated.

Given Code	Expected Output
<pre>public class StudentTester{     public static void main (String args[]){         CSEStudent.details();         System.out.println("1-----");         CSEStudent s1 = new CSEStudent("Bob", 23);         s1.info();         System.out.println("2-----");         CSEStudent s2 = new CSEStudent("Don", 33);         s2.info();         System.out.println("3-----");         s1.addLabBasedCourse("CSE220");         s1.addLabBasedCourse("CSE221");         System.out.println("4-----");         s1.info();         System.out.println("5-----");         CSEStudent.details();         System.out.println("6-----");         s1.addLabBasedCourse("CSE230");         System.out.println("7-----");         s1.info();         System.out.println("8-----");         s2.addLabBasedCourse("CSE110");         s2.info();     } }  class Student{     public String name;     public int id;     public String courses = "";      public Student(String n, int i){         name = n;         id = i;     }      public void info(){         System.out.println("Name: "+name);         System.out.println("ID: "+id);         System.out.println("Courses: "+courses);     } }</pre>	<pre>Total CSE Students: 0 Available Lab Based Courses: CSE110 CSE111 CSE220 CSE221 1----- Name: Bob ID: 23 Courses: 2----- Name: Don ID: 33 Courses: 3----- 4----- Name: Bob ID: 23 Courses: CSE220 CSE221 5----- Total CSE Students: 2 Available Lab Based Courses: CSE110 CSE111 CSE220 CSE221 6----- It is not a lab based course! 7----- Name: Bob ID: 23 Courses: CSE220 CSE221 8----- Name: Don ID: 33 Courses: CSE110</pre>



## Task 8

Given the following classes, write the code for the **Player** and the **Manager** classes derived from SportsPerson class so that the following output is printed. To calculate the match earnings use the following formula:

1. Player:  $(\text{total\_goal} * 1000) + (\text{total\_match} * 10)$
2. Manager:  $\text{match\_win} * 1000$

Given Code	Expected Output
<pre>public class PlayerTester {     public static void main(String[] args) {         Player playerOne = new Player("Al-Nassr", "Ronaldo", "Striker", 25, 32);         playerOne.calculateRatio();         playerOne.printDetails();         System.out.println("-----");         Manager managerOne = new Manager("Real Madrid", "Zidane", "Manager", 25);         managerOne.printDetails();     } }  class SportsPerson {     private String team;     private String name;     public String role;     public double earningPerMatch;      public SportsPerson(String teamName, String name, String role){         this.team = teamName;         this.name = name;         this.role = role;         this.earningPerMatch = 0;     }      public String getNameTeam() {         return "Name: " + name + ", Team Name: " + team;     } }</pre>	<pre>Name: Ronaldo, Team Name: Al-Nassr Team Role: Striker Total Goal: 25, Total Played: 32 Goal Ratio: 0.78 Match Earning: 25320K ----- Name: Zidane, Team Name: Real Madrid Team Role: Manager Total Win: 25 Match Earning: 25000K</pre>

## Task 9

1	public class A{
2	public int temp = 4;
3	public int sum = 1;
4	public int y = 2;
5	public void methodA(int m, int n){
6	int x = 0;
7	y = y + m + (temp++);
8	x = x + 2 + n;
9	sum = sum + x + y;
10	System.out.println(x + " " + y+ " " + sum);
11	}
12	}
13	public class B extends A {
14	public int x = 6;
15	public void methodB(int m, int n){
16	int y =0;
17	y = y + this.y;
18	x = this.y + 2 + temp;
19	methodA(x, y);
20	sum = x + y + super.sum;
21	System.out.println(x + " " + y+ " " + sum);
22	}
23	}

<pre> A a1 = new A(); a1.methodA(1, 1); B b1 = new B(); b1.methodB(1, 2); </pre>	x	y	sum

## Ungraded Tasks (Optional)

(You don't have to submit the ungraded tasks)

### Task 1

Complete the class **Student** so that the desired outputs are generated properly.

Given Code	Expected Output
<pre>public class Tester5 {     public static void main(String[] args) {         Student s1= new Student(1, "Matthew", 1, "Mr. XYZ");         s1.printStudentInfo();         System.out.println("=====");         Student s2= new Student(2, "Wade", 1, "Mr. XYZ");         s2.printStudentInfo();         System.out.println("=====");         Student s3= new Student(1, "Logan", 2, "Mr. ABC");         s3.printStudentInfo();     } }  public class Section {     public int sec_id;     public String teacher_name;     public int student_id;     public String student_name;     public Section(int id, String name){         this.sec_id = id;         this.teacher_name = name;     }      public void printInfo(){         System.out.println("Section id: "+ this.sec_id);         System.out.println("Teacher name: "+ this.teacher_name);     } }  class Student extends Section {     //Your Code Here }</pre>	<pre>Student id: 1 Student name: Matthew Section id: 1 Teacher name: Mr. XYZ ===== Student id: 2 Student name: Wade Section id: 1 Teacher name: Mr. XYZ ===== Student id: 1 Student name: Logan Section id: 2 Teacher name: Mr. ABC</pre>

## Task 2

Complete the class **Section** so that the desired outputs are generated properly.

Given Code	Expected Output
<pre>public class Tester6 {     public static void main(String[] args) {         Section sec1= new Section("Mr. XYZ");         Section sec2= new Section("Mr. ABC");         System.out.println("Number of Sections: "+ Section.section_count);         System.out.println("=====");         Student s1= new Student(1, "Matthew", sec1.sec_id, sec1.teacher_name);         s1.printStudentInfo();         System.out.println("=====");         Student s2= new Student(2, "Wade", sec1.sec_id, sec1.teacher_name);         s2.printStudentInfo();         System.out.println("=====");         Student s3= new Student(1, "Logan", sec2.sec_id, sec2.teacher_name);         s3.printStudentInfo();         System.out.println("=====");         System.out.println("Number of Students: "+ Student.student_count);     } }  public class Section {     //Your Code Here }  public class Student extends Section {     public Student (int id, String name, int sec_id, String teacher_name){         student_count+=1;         this.student_id = id;         this.student_name = name;         this.sec_id= sec_id;         this.teacher_name= teacher_name;     }      public void printStudentInfo(){         System.out.println("Student id: "+ this.student_id);         System.out.println("Student name: "+ this.student_name);         System.out.println("Section id: "+ this.sec_id);         System.out.println("Teacher name: "+ this.teacher_name);     } }</pre>	<pre>Number of Sections: 2 ===== Student id: 1 Student name: Matthew Section id: 1 Teacher name: Mr. XYZ ===== Student id: 2 Student name: Wade Section id: 1 Teacher name: Mr. XYZ ===== Student id: 1 Student name: Logan Section id: 2 Teacher name: Mr. ABC ===== Number of Students: 3</pre>