Answersheet of Worksheet -C

1.

```
package com.java.julymonth;

//Base class for Engine
class Engine {
 void start() {
    System.out.println("Engine started");
 }
}

//Base class for Bus
class Bus {
 void accelerate() {
    System.out.println("Bus accelerating");
 }
}

//AshokLeyland class inherits from Bus
class AshokLeyland extends Bus {
 void drive() {
    System.out.println("Bus is being driven");
 }
}

//Volvo class inherits from Bus
class Volvo extends Bus {
 void drive () {
    System.out.println("Volvo is being driven");
 }
}

//HybridInheritanceDemo class demonstrates hybrid and hierarchical inheritance
public class InheritNew2 {
 public static void main(String[] args) {
            AshokLeyland ashokLeyland = new AshokLeyland();
            ashokLeyland.accelerate();
            ashokLeyland.drive();

            Volvo volvo = new Volvo();
            volvo.accelerate();
            volvo.drive();

    Engine engine = new Engine();
    engine.start();
 }
}
```

Output:
Bus accelerating
Bus is being driven
Bus accelerating
Volvo is being driven
Engine started

2.

```
package com.java.julymonth;

//Here abstract base class Shape with an abstract method area()
//The Circle and Square classes both extend Shape
//and provide their own implementations of the area() method

abstract class Shape {
    abstract double area();
}

class Circle extends Shape {
    private double radius;

    public Circle(double radius) {
        this.radius = radius;
    }

    @Override
    double area() {
        return Math.PI * radius * radius;
    }
}

class Square extends Shape {
    private double side;

    public Square(double side) {
        this.side = side;
    }

    @Override
    double area() {
        return side * side;
    }
}


public class PolymorphismEx2 {
    public static void main(String[] args) {
        Shape circle = new Circle(6.0);
        Shape square = new Square(6.0);
```

```
//area() is being used to calculate the area of shape
        System.out.println("Area of Circle: " + circle.area());
        System.out.println("Area of Square: " + square.area());
    }
}
```

Output:

Area of Circle: 113.09733552923255
Area of Square: 36.0

3.

```
package com.java.julymonth;

        import java.util.Scanner;

        class Organization {
            private String name;
            private int rating;

            // Constructor
            public Organization(String name) {
                this.name = name;
                this.rating = 0; // Default rating
            }

            // Method to set the rating
            public void setRating(int rating) {
                if (rating >= 0 && rating <= 10) {
                    this.rating = rating;
                } else {
                    System.out.println("Invalid rating. Please enter a rating between 0 and 10.");
                }
            }

            // Method to get the rating
            public int getRating() {
                return rating;
            }

            // Method to get the organization name
            public String getName() {
                return name;
            }
        }

        public class RatingProgram {
            public static void main(String[] args) {
                Scanner scanner = new Scanner(System.in);

                System.out.print("Enter the name of the organization: ");
                String orgName = scanner.nextLine();
```

```
            Organization organization = new Organization(orgName);

            System.out.print("Enter the rating for " + orgName + ": ");
            int rating = scanner.nextInt();
            organization.setRating(rating);

            System.out.println("Rating for " + organization.getName() + ": " +
organization.getRating());

            scanner.close();
        }
    }
```

Output:

Enter the name of the organization: Amazon
Enter the rating for Amazon: 4
Rating for Amazon: 4

4.

```
package com.java.julymonth;

import java.io.BufferedReader;

import java.io.IOException;

import java.io.InputStreamReader;


public class BufferReaderEx {

   public static void main(String[] args) {

      BufferedReader reader = new BufferedReader(new InputStreamReader(System.in));


      try {

         System.out.print("Enter some text: ");

         String inputText = reader.readLine(); // Read a line of text from the input stream


         System.out.println("You entered: " + inputText);

      } catch (IOException e) {
```

```
            e.printStackTrace();
        } finally {
            try {
                reader.close(); // Close the BufferedReader
            } catch (IOException e) {
                e.printStackTrace();
            }
        }
    }
}
```

Output:

Enter some text: Welcome to Data Academy
You entered: Welcome to Data Academy

5.

```
package com.java.julymonth;

//Node class represents individual elements in the linked list
class Node {
    int data;
    Node next;

    public Node(int data) {
        this.data = data;
        this.next = null;
    }
}
//LinkedList class contains methods for inserting elements
//at the end and displaying the elements of the linked list
class LinkedList {
    Node head;

    public LinkedList() {
        this.head = null;
    }

    public void insert(int data) {
        Node newNode = new Node(data);
        if (head == null) {
            head = newNode;
        } else {
```

```
            Node current = head;
            while (current.next != null) {
               current = current.next;
            }
            current.next = newNode;
         }
      }

      public void display() {
         Node current = head;
         while (current != null) {
            System.out.print(current.data + " ");
            current = current.next;
         }
         System.out.println();
      }
}

public class SingleLinkList {
   public static void main(String[] args) {
      LinkedList list = new LinkedList();
      list.insert(6);
      list.insert(12);
      list.insert(15);
      list.insert(24);

      System.out.println("Linked List elements:");
      list.display();
   }
}
```

Output:

Linked List elements:
6 12 15 24