Journal – 3

1.Write a program which accepts starting character and ending character. Display one by one character from starting character till the ending character at the interval of one second using thread.

```
import java.util.*;
public class CharacterPrinter implements Runnable {
    private char startChar;
    private char endChar;

    public CharacterPrinter(char startChar, char endChar) {this.startChar =
        startChar;
        this.endChar = endChar;
    }

    public void run() {
        for (char ch = startChar; ch <= endChar; ch++) {
            System.out.print(ch + " ");
            try {
                Thread.sleep(1000); // Wait for one second
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }

    public static void main(String[] args) {
        Scanner s=new Scanner (System.in);
        System.out.println("Enter the starting Character:"); char
        startChar =s.next().charAt(0); System.out.println("Enter
        the Endding Character:");char endChar =
        s.next().charAt(0);

        CharacterPrinter characterPrinter = new CharacterPrinter(startChar, endChar);Thread
        thread = new Thread(characterPrinter);
        thread.start();
    }
}
```

```
D:\JAVA\21BCA74>java PRG_01
Enter the starting character: A
Enter the ending character: K
ABCDEFGHIJK
D:\JAVA\21BCA74>
```

2.Write a program that stores details of 5 employees and display this information after every 10 second.

```
import java.util.*;
public class Empdetail implements Runnable {int
    id[]={1,2,3,4,5};
        String name[]={"Kaushik","Abhay","Ajay","Chandresh","Brijesh"};
        String dept[]={"IT","Management","Traansport","HR","Salse"};int
        salary[]={50000,45000,40000,52000,48000};
    public void run() {

        for (int i=0;i<5;i++) { System.out.println("Emp
            id:"+id[i]); System.out.println("Emp
            name:"+name[i]);
            System.out.println("Emp department:"+dept[i]);
            System.out.println("Emp salary:"+salary[i]);
            try {
                Thread.sleep(1000); // Wait for one second
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }

    public static void main(String[] args) {

        Empdetail Empdetail = new Empdetail();
        Thread thread = new Thread(Empdetail);
        thread.start();
    }
}
```

```
D:\JAVA\21BCA74>javac PRG_02.java

D:\JAVA\21BCA74>java PRG_02
Enter Emp 1 Name : 1
Enter Emp 1 Age : 16
Enter Emp 1 Department : it
Enter Emp 1 Salary : 50000

Enter Emp 2 Name : kush
Enter Emp 2 Age : 17
Enter Emp 2 Department : it
Enter Emp 2 Salary : 600000

Enter Emp 3 Name : nisit
Enter Emp 3 Age : 20
Enter Emp 3 Department : mangmaent
Enter Emp 3 Salary : 600000

Enter Emp 4 Name : abhi
Enter Emp 4 Age : 20
Enter Emp 4 Department : it
Enter Emp 4 Salary : 20000

Enter Emp 5 Name : vivek
Enter Emp 5 Age : 19
Enter Emp 5 Department : it
Enter Emp 5 Salary : 300000
```

3.Write a java application which accepts 10 names of student And their age. Sort names and age in descending order at an Interval of 1 second using thread.

```
import java.util.Arrays;
import java.util.Scanner;

public class Studentdetail1{

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

        String[] names = new String[10];
        int[] ages = new int[10];

        for (int i = 0; i < 10; i++) {
            System.out.print("Enter name of student " + (i + 1) + ": ");names[i]
```

```
    = scanner.nextLine();
    System.out.print("Enter age of student " + (i + 1) + ": ");ages[i] =
    scanner.nextInt();
    scanner.nextLine();
}
            while (true) {
    System.out.println("\nSelect an option:");
    System.out.println("1. Sort via Name.");
    System.out.println("2. Sort via Age.");
    System.out.println("3. Exit");
                    System.out.print("\nSelect Your Choice : ");int
    choice = scanner.nextInt();
    scanner.nextLine();

    switch (choice) {
        case 1:
            for (int i = 0; i < 10; i++) {
                                        for (int j = i + 1; j < 10; j++) {if
```

```
 (names[i].compareToIgnoreCase(names[j]) < 0) {
            String tempName = names[i];
            names[i] = names[j];
            names[j] = tempName;
            int tempAge = ages[i];
            ages[i] = ages[j]

ages[j] = tempAge;
                        }
            }
 }
            System.out.println("\nSorted Names in Descending Order:");for
            (int i = 0; i < 10; i++) {
                        try {
                                    System.out.println(names[i] + " - " + ages[i]);
                                    Thread.sleep(1000);
                        }
                        catch (InterruptedException e) {
                                    e.printStackTrace();
                        }
            }
            break;
            case 2:
                  for (int i = 0; i < 10; i++) {
                     for (int j = i + 1; j < 10; j++) { if
                                    (ages[i] < (ages[j])) {
                                                int tempage = ages[i];
                                                ages[i] = ages[j];
                                                ages[j] = tempage;
                                                String tempname = names[i];
                                                names[i] = names[j]; names[j]
                                                = tempname;
                                    }
                        }
            }
            System.out.println("\nSorted Ages in Descending Order:");for
                        (int i = 0; i < 10; i++) {
                                    try {



                        }
    }
 }
```

```
D:\JAVA\21BCA74>javac PRG_03.java

D:\JAVA\21BCA74>java PRG_03
Enter name of student 1: kush
Enter age of student 1: 20
Enter name of student 2: vivek
Enter age of student 2: 20
Enter name of student 3: abhi
Enter age of student 3: 20
Enter name of student 4: yash
Enter age of student 4: 30
Enter name of student 5: jaimin
Enter age of student 5: 20
Enter name of student 6: rahul
Enter age of student 6: 16
Enter name of student 7: raj
Enter age of student 7: 14
Enter name of student 8: nisit
Enter age of student 8: 20
Enter name of student 9: ansh
Enter age of student 9: 23
Enter name of student 10: aakash
Enter age of student 10: 25

Select an option:
1. Sort via Name.
2. Sort via Age.
3. Exit

Select Your Choice : 1
```

4.Create package stores. Under it create a class called stock With member variable (item_no, item_name, stock_availible, And cost). Under the default package create a class called sales With field name (qty_sold) and it is the child class of stores class.

```
package stores;
```

```
public class stock { private
    int item_no;
    private String item_name;
```

```
    private int stock_available;
    private double cost;

    public stock(int item_no, String item_name, int stock_available, double cost) {this.item_no
        = item_no;
        this.item_name = item_name;
        this.stock_available = stock_available;
        this.cost = cost;
    }

    public int getItem_no() {
        return item_no;
    }

    public String getItem_name() {
        return item_name;
    }

    public int getStock_available() {
        return stock_available;
    }

    public double getCost() {
        return cost;
    }

    public void setStock_available(int stock_available) {this.stock_available =
        stock_available;
    }

    public void setCost(double cost) {
        this.cost = cost;
    }

    public String toString() {
        return "Item No.: " + item_no + ", Item Name: " + item_name + ", Stock Available: " +
stock_available + ", Cost: " + cost;
    }
}
package stores;
public class sales extends stores.stock {
    private int qty_sold;

    public sales(int item_no, String item_name, int stock_available, double cost, int qty_sold)
{
        super(item_no, item_name, stock_available, cost);
```

```
        this.qty_sold = qty_sold;
    }

    public int getQty_sold() {
        return qty_sold;
    }

    public void setQty_sold(int qty_sold) {this.qty_sold =
        qty_sold;
    }

    public double calculateSales() {
        return qty_sold * getCost();
    }
    public String toString() {
        return super.toString() + ", Quantity Sold: " + qty_sold + ", Sales: " + calculateSales();
    }
}

import stores.*;
import java.util.*;

public class Program4{
    public static void main(String[] args) { ArrayList<stock>
        items = new ArrayList<stock>();items.add(new stock(1,
        "Mango", 10, 20.0));
        items.add(new stock(2, "Apple", 20, 30.0));
        items.add(new stock(3, "Banana", 30, 40.0));

        Scanner scanner = new Scanner(System.in);

        while (true) { System.out.println("\nCurrent
            Stock:");for (stock item : items) {
                System.out.println(item);
            }

            System.out.print("\nEnter the item no. to add stock, or 0 to exit:");int
            item_no = scanner.nextInt();
            if (item_no == 0) {
                break;
            }

            stock item = items.stream().filter(i -> i.getItem_no() ==
item_no).findFirst().orElse(null);
            if (item == null) {
```

```
                System.out.println("Invalid item no.");
            } else {
                System.out.print("\nEnter the quantity to add:");int
                qty = scanner.nextInt();
                item.setStock_available(item.getStock_available() + qty);
                System.out.println("Stock added successfully.");
            }
        }
    }
}
```

5.Create a class namely Vehicle to maintain vehicle data like chassisNo, nameOfVehicle, colour, owner using singly circular linked list. Perform following operations on student list:

a. Add vehicle details at the end of the list .

b. Remove last vehicle detail in the list .

c. Display all vehicle details in the list.

```
import java.util.Scanner;
class Vehicle {
    private int chassisNo;
    private String nameOfVehicle;
    private String colour;
    private String owner;
    private Vehicle next;

    public Vehicle(int chassisNo, String nameOfVehicle, String colour, String owner) {this.chassisNo =
        chassisNo;
        this.nameOfVehicle = nameOfVehicle;
        this.colour = colour;
        this.owner = owner;
        this.next = null;
                    System.out.println("\nData Inserted Successfully.");
    }

    public int getChassisNo() {
        return chassisNo;
    }

    public void setChassisNo(int chassisNo) {
```

```
    this.chassisNo = chassisNo;
}

public String getNameOfVehicle() {
    return nameOfVehicle;
}

public void setNameOfVehicle(String nameOfVehicle) {
    this.nameOfVehicle = nameOfVehicle;
}

public String getColour() {
    return colour;
}

public void setColour(String colour) {
    this.colour = colour;
}

public String getOwner() {
    return owner;
}

public void setOwner(String owner) {
    this.owner = owner;
}

public Vehicle getNext() {
    return next;
}
```

```
    public void setNext(Vehicle next) {
        this.next = next;
    }
}



class VehicleList { private
    Vehicle tail;

    public VehicleList() {
        tail = null;
    }

    public void addVehicle(int chassisNo, String nameOfVehicle, String colour, String owner)
{
        Vehicle newVehicle = new Vehicle(chassisNo, nameOfVehicle, colour, owner);if (tail
        == null) {
            tail = newVehicle;
            tail.setNext(tail);
        }
                    else {
            newVehicle.setNext(tail.getNext());
            tail.setNext(newVehicle);
            tail = newVehicle;
        }
    }

    public void removeLastVehicle() {if
        (tail == null) {
            System.out.println("List is empty");
```

```
            return;
        }

        if (tail.getNext() == tail) {
            tail = null;
            return;
        }

          Vehicle current = tail.getNext();
          while (current.getNext() != tail) {
              current = current.getNext();
        }
        current.setNext(tail.getNext());
        tail = current;
    }

    public void displayVehicles() {if
        (tail == null) {
            System.out.println("List is empty");
            return;
        }

        Vehicle current = tail.getNext();do
        {
                                System.out.println("----------------------------------------------------");
            System.out.println("Chassis No: " + current.getChassisNo() +
                    " \nName of Vehicle: " + current.getNameOfVehicle() +"
                    \nColour: " + current.getColour() +
                    " \nOwner: " + current.getOwner());
                                System.out.println("----------------------------------------------------");
```

```
            current = current.getNext();
        } while (current != tail.getNext());
    }
}



public class Program5{
        public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
                VehicleList vehicleList = new VehicleList();
        while (true) {
                        System.out.println("\n----------");
            System.out.println("\nCircular Singly Linked List Operations\n");
                        System.out.println("----------");
            System.out.println("1. Insert at End.");
            System.out.println("2.  Delete  from  End.");
            System.out.println("3.  Get  Item  detail's.");
            System.out.println("4. Exit.");
                        System.out.println("----------");
                        System.out.print("Enter your Choice : ");
            int choice = scan.nextInt();
            switch (choice)
            {
                                case 1 :
                                        int ch_no;
                                        String nameOfVeh, colour, owner;
                                        System.out.print("Enter Chassis_No : ");
                                        ch_no=scan.nextInt();
                                        scan.nextLine();
```

```
                System.out.print("Enter Name of vehicle : ");
                nameOfVeh=scan.nextLine();
                System.out.print("Enter Color of vehicle : ");
                colour=scan.nextLine(); System.out.print("Enter
                Owner Name : "); owner=scan.nextLine();

vehicleList.addVehicle(ch_no,nameOfVeh,colour,owner);
                break;
            case 2 :
                vehicleList.removeLastVehicle();
                System.out.println("\nData Deleted Successfully.");
                break;
            case 3 :
                System.out.println("Vehicle details:");
                vehicleList.displayVehicles();
            case 4 :break;
                System.out.println("Program Exited...");
                System.exit(0);
                break;

                default:
                System.out.println("Invalid choice. Try again.");
                                    }
                }
            }
        }
```

```
D:\JAVA\21BCA74>java PRG_05

------------------------------------------------

Circular Singly Linked List Operations

------------------------------------------------
1. Insert at End.
2. Delete from End.
3. Get Item detail's.
4. Exit.
------------------------------------------------
Enter your Choice : 1
Enter Chassis_No : 5
Enter Name of vehicle : maruti
Enter Color of vehicle : red
Enter Owner Name : maruti

Data Inserted Successfully.

------------------------------------------------

Circular Singly Linked List Operations

------------------------------------------------
1. Insert at End.
2. Delete from End.
3. Get Item detail's.
4. Exit.
------------------------------------------------
Enter your Choice : 2

Data Deleted Successfully.

------------------------------------------------

Circular Singly Linked List Operations

------------------------------------------------
1. Insert at End.
2. Delete from End.
3. Get Item detail's.
4. Exit.
------------------------------------------------
Enter your Choice : 1
Enter Chassis_No : 5
Enter Name of vehicle : verna
Enter Color of vehicle : white
```

6.Create a class namely Book to maintain Book details like id, Name, quantity and author using singly linked list. Perform Following operations on book list:

a.Add book details in the begging of the list .

b.Add book details at the end of the list .

c.Add book detail at particular position .

d.Remove first book detail from the list .

e.Remove last book detail from the list .

f.Display all book details in the list .

```
import java.util.Scanner;
class Book {
    int id;
    String name;
    int quantity;
    String author;
    Book next;

   public Book(int id, String name, int quantity, String author) {
      this.id = id;
      this.name = name;
      this.quantity = quantity;
      this.author = author;
      this.next = null;
                System.out.println("\nData Inserted Successfully.");
   }

   public int getId() {
      return id;
   }

   public void setId(int id) {
      this.id = id;
   }

   public String getName() {
      return name;
   }

   public void setName(String name) {
```

```
    this.name = name;
}

public int getQuantity() {
```

```
        return quantity;
    }

    public void setQuantity(int quantity) {
        this.quantity = quantity;
    }

    public String getAuthor() {
        return author;
    }

    public void setAuthor(String author) {
        this.author = author;
    }

    public Book getNext() {
        return next;
    }

    public void setNext(Book next) {
        this.next = next;
    }
}


class BookList {
    private Book head;

    public BookList() {
        head = null;
    }

    public void addBookAtBeginning(int id, String name, int quantity, String author) {
        Book newBook = new Book(id, name, quantity, author);
        newBook.setNext(head);
        head = newBook;
    }

    public void addBookAtEnd(int id, String name, int quantity, String author) {
        Book newBook = new Book(id, name, quantity, author);
        if (head == null) {
            head = newBook;
        } else {
            Book current = head;
```

```
while (current.getNext() != null) {
    current = current.getNext();
```

```
            }
            current.setNext(newBook);
        }
    }

    public void addBookAtPosition(int id, String name, int quantity, String author, int
position) {
        if (position == 1) {
            addBookAtBeginning(id, name, quantity, author);
        } else {
            Book newBook = new Book(id, name, quantity, author);
            Book current = head;
            int currentPosition = 1;
            while (currentPosition < position - 1 && current != null) {
                current = current.getNext();
                currentPosition++;
            }
            if (current != null) {
                newBook.setNext(current.getNext());
                current.setNext(newBook);
            } else {
                System.out.println("Invalid position");
            }
        }
    }

    public void removeFirstBook() {
        if (head == null) {
            System.out.println("List is empty");
        } else {
            head = head.getNext();
        }
    }

    public void removeLastBook() {
        if (head == null) {
            System.out.println("List is empty");
        }
                    else if (head.getNext() == null) {
            head = null;
        }
                    else {
            Book current =head;
                            while (current.getNext().getNext() != null) {
```

```
            current = current.getNext();
        }
```

```
                        current.setNext(null);
                }
        }

        public void displayBooks() {
                if (head == null) {
                        System.out.println("List is empty");
                } else {
                        Book current = head;
                        System.out.println("----------");
                        while (current != null) {
                                System.out.println("ID: " + current.getId() + ", Name: " +
current.getName() + ", Quantity: " + current.getQuantity() + ", Author: " +
current.getAuthor());
                                current = current.getNext();
                        }
                        System.out.println("----------");
                }
        }
}

public class Program6
{
   public static void main(String[] args)
   {
                int id;
                String name;
                int quantity;
                String author;
      Scanner scan = new Scanner(System.in);
                BookList bookList = new BookList();
      while (true) {
                        System.out.println("\n----------");
        System.out.println("\nSingly Linked List Operations\n");
                        System.out.println("----------");
        System.out.println("1. Insert at Begining.");
        System.out.println("2. Insert at End.");
        System.out.println("3. Insert at Position.");
        System.out.println("4. Delete from Head.");
        System.out.println("5. Delete from Tail.");
        System.out.println("6. Display Data.");
                        System.out.println("7. Exit.");
        System.out.println("----------");
                        System.out.print("Enter your Choice : ");
```

```
int choice = scan.nextInt();
switch (choice)
```

```
{
case 1 :
                        System.out.print("Enter Your ID : ");
                        id=scan.nextInt();
                        scan.nextLine();
                        System.out.print("Enter Your Name : ");
                        name=scan.nextLine();
                        System.out.print("Enter Quantity of Books : ");
                        quantity=scan.nextInt();
                        scan.nextLine();
                        System.out.print("Enter Author Name : ");
                        author=scan.nextLine();
                        bookList.addBookAtBeginning(id,name,quantity,author);
   break;
case 2 :
                        System.out.print("Enter Your ID : ");
                        id=scan.nextInt();
                        scan.nextLine();
                        System.out.print("Enter Your Name : ");
                        name=scan.nextLine();
                        System.out.print("Enter Quantity of Books : ");
                        quantity=scan.nextInt();
                        scan.nextLine();
                        System.out.print("Enter Author Name : ");
                        author=scan.nextLine();
                        bookList.addBookAtEnd(id,name,quantity,author);
   break;
case 3 :
                        int position;
                        System.out.print("Enter Position you want to Insert Record : ");
                        position=scan.nextInt();
                        System.out.print("Enter Your ID : ");
                        id=scan.nextInt();
                        scan.nextLine();
                        System.out.print("Enter Your Name : ");
                        name=scan.nextLine();
                        System.out.print("Enter Quantity of Books : ");
                        quantity=scan.nextInt();
                        scan.nextLine();
                        System.out.print("Enter Author Name : ");
                        author=scan.nextLine();
   bookList.addBookAtPosition(id,name,quantity,author,position);
   break;
case 4 :
```

```
bookList.removeFirstBook();
                System.out.println("\nData Deleted Successfully.");
```

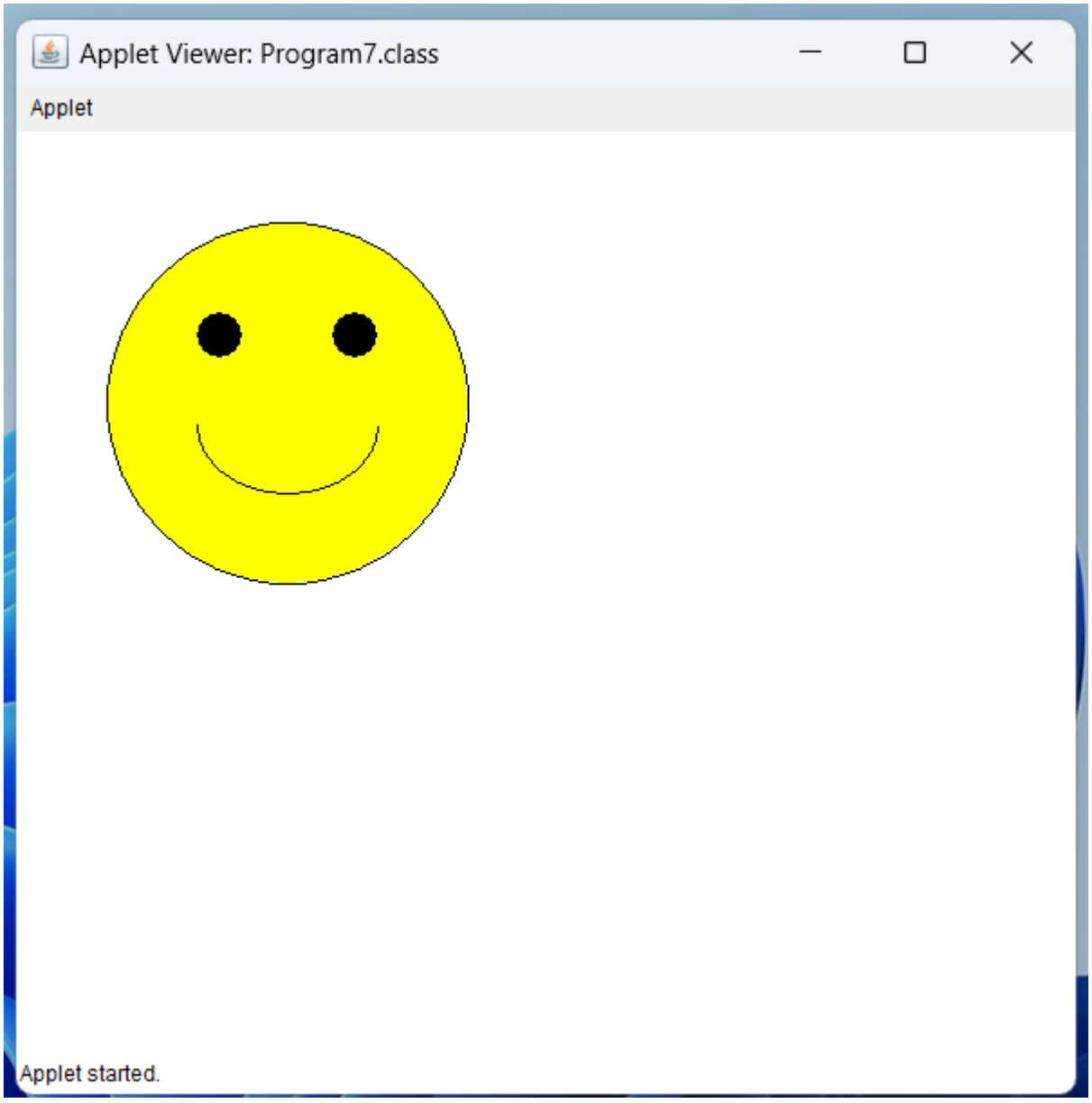
```
    break;
case 5 :
    bookList.removeLastBook();
                        System.out.println("\nData Deleted Successfully.");
    break;
case 6 :
    bookList.displayBooks();
    break;
                case 7 :
                        System.out.println("Program Exited...");
                        System.exit(0);
                        br
default :
```

```
D:\JAVA\21BCA74>javac PRG_06.java

D:\JAVA\21BCA74>java PRG_06

------------------------------------------------

Singly Linked List Operations

------------------------------------------------
1. Insert at Begining.
2. Insert at End.
3. Insert at Position.
4. Delete from Head.
5. Delete from Tail.
6. Display Data.
7. Exit.
------------------------------------------------
Enter your Choice : 1
Enter Your ID : 74
Enter Your Name : kush
Enter Quantity of Books : 5
Enter Author Name : vtcbb

Data Inserted Successfully.

------------------------------------------------

Singly Linked List Operations

------------------------------------------------
1. Insert at Begining.
2. Insert at End.
3. Insert at Position.
4. Delete from Head.
5. Delete from Tail.
6. Display Data.
7. Exit.
------------------------------------------------
Enter your Choice : 2
Enter Your ID : 73
Enter Your Name : vivek
Enter Quantity of Books : 6
Enter Author Name : vtcbb

Data Inserted Successfully.

------------------------------------------------
```

7.Write a programme to draw smiley with colour using applet.

```
import java.awt.*;
import
java.applet.*;

/*<applet code="Program7.class" height="800" width="1860"> </applet>*/

public class Program7 extends Applet {

    public void paint(Graphics g) {

        g.setColor(Color.yellow);
        g.fillOval(50,50,200,200)
        ; g.setColor(Color.black);
        g.drawOval(50,50,200,20
        0);

        g.setColor(Color.black)
        ;
        g.fillOval(100,100,25,2
        5);
        g.fillOval(175,100,25,2
        5);

        g.setColor(Color.black);
        g.drawArc(100,125,100,75,0,-
        180);

    }
}
```

```
D:\JAVA\21BCA74>javac PRG_07.java

D:\JAVA\21BCA74>appletviwer PRG_07.java
```

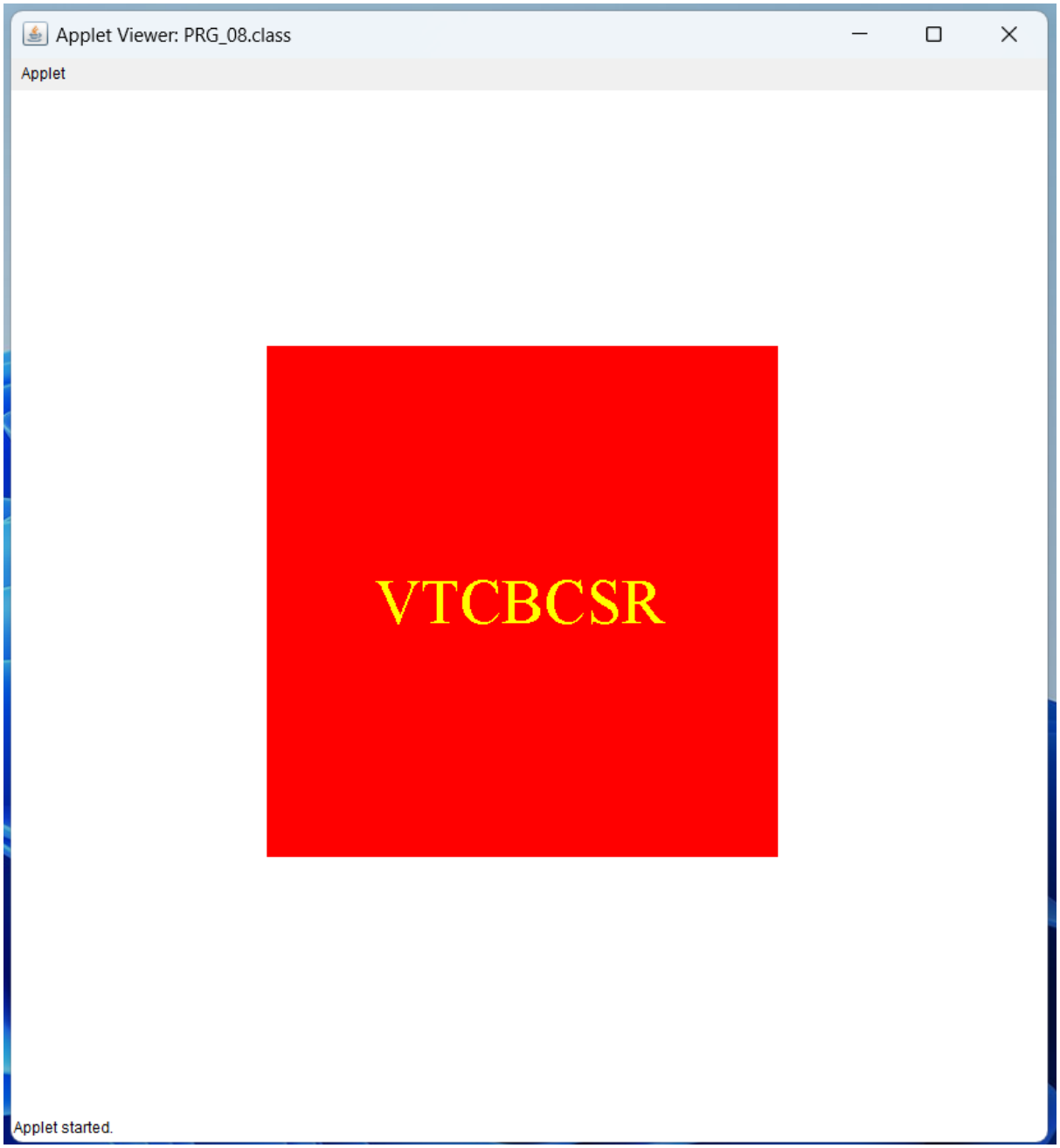


8.Create an applet which displays a solid square having red Colour. Display name of your college within the square with Font style ='Times New Roman', font size=50 and font Colour='Yellow'.

```
import java.awt.*;
import
```

```
java.applet.*;

//<applet code="Program8.class" height="800" width="1860"> </applet>

public class Program8 extends Applet {

    public void paint(Graphics g) {

        g.setColor(Color.red);
        g.fillRect(200,200,400,40
        0);

        g.setColor(Color.yellow);
        Font font = new Font("Times New Roman", Font.PLAIN, 50);
        g.setFont(font);
        FontMetrics metrics = g.getFontMetrics(font);
        int x = (200 - metrics.stringWidth("My College")) / 2;
        int y = ((200 - metrics.getHeight()) / 2) + metrics.getAscent();
        g.drawString("VTCBCSR", 300+x, 300+y);

    }
}
```

```
D:\JAVA\21BCA74>javac PRG_08.java

D:\JAVA\21BCA74>appletviewer PRG_08.java
```

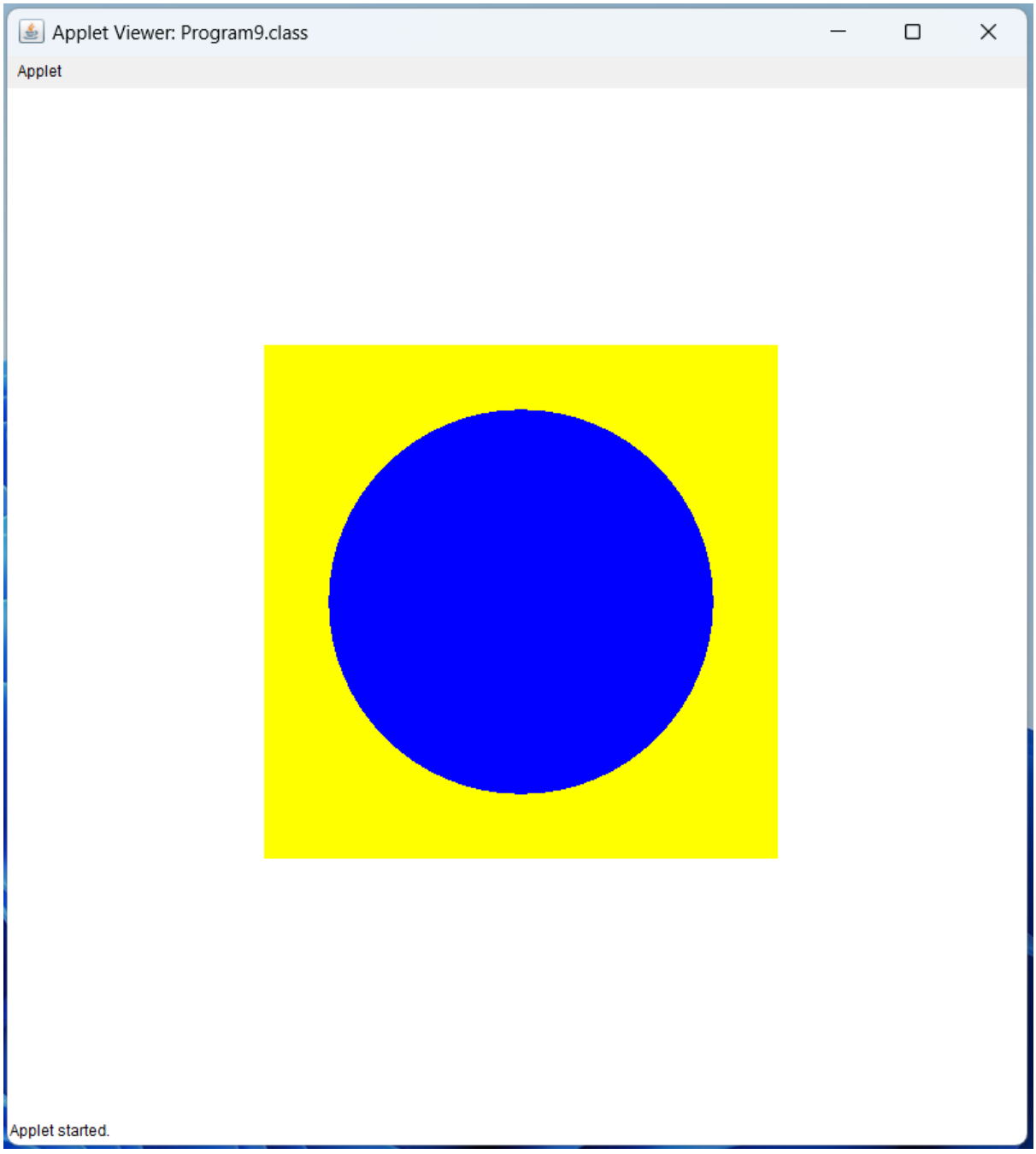


9.Write a program to draw circle inside a square in applet with.

```
import java.awt.*;
import
java.applet.*;

//<applet code="Program9.class" height="800" width="1860"> </applet>

public class Program9 extends Applet {
```

```
    public void paint(Graphics g) {

        g.setColor(Color.yellow);
        g.fillRect(200,200,400,40
        0);



        g.setColor(Color.blue);
        g.fillOval(250,250,300,30
        0);


    }
}
```

```
D:\JAVA\21BCA74>javac PRG_09.java

D:\JAVA\21BCA74>appletviewer PRG_09.java
```

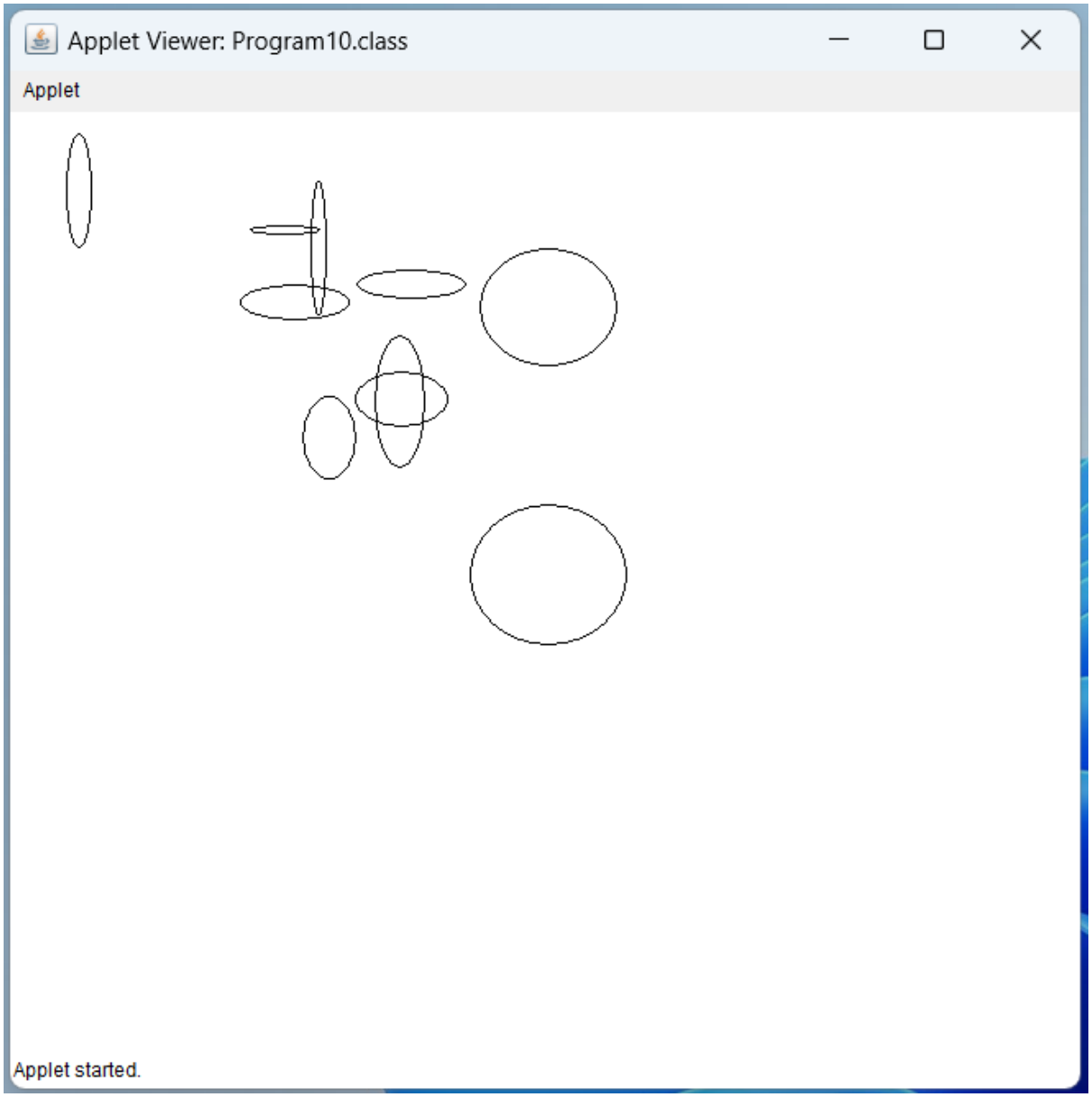


10.Write an applet program which accepts number of ovals User wants to display using parameter tag and draws ovals in Different positions.

```
import java.awt.*;
import
java.applet.*;
```

```
/*<applet code="Program10.class" height="800" width="1860">
        <param name="numOvals" value="10">
  </applet>*/

public class Program10 extends Applet
    {private int numOvals;

    public void init() {
        String numOvalsStr = getParameter("numOvals");
        numOvals = Integer.parseInt(numOvalsStr);
    }

    public void paint(Graphics g) {
        for (int i = 0; i < numOvals; i++) {
            int x = (int)(Math.random() *
            300);int y = (int)(Math.random() *
            300);int w = (int)(Math.random()
            * 100);int h = (int)(Math.random()
            * 100);g.drawOval(x, y, w, h);
        }
    }
}
```

```
D:\JAVA\21BCA74>javac PRG_10.java

D:\JAVA\21BCA74>appletviewer PRG_10.java
```


Applet Viewer: Program10.class
Applet
Applet started.