Question 1:

```java
import java.util.*; // java is the worst language ever made

class Calculator {

    public int Add(int num1, int num2) {
        return num1 + num2;
    }

    public int Add(float num1, float num2) {
        Float result = num1 + num2;
        Integer rInt = result.intValue();
        return rInt;
    }

    public int Add(String num1, String num2) {
        Integer n1 = Integer.parseInt(num1);
        Integer n2 = Integer.parseInt(num2);
        return n1 + n2;
    }

    public int Add(int arr[]) {
        int result = 0;
        for (int i = 0; i < arr.length; i++) {
            result = result + arr[i];
        }
        return result;
    }

    public int Add(String arr[]) {
        int result = 0;
        for (int i = 0; i < arr.length; i++) {
            result = result + Integer.parseInt(arr[i]);
        }
        return result;
    }

}
```

```java
public class l227971_Lab2_q1 {

    public static void main(String[] args) {
        Calculator calc = new Calculator();
        System.out.println(calc.Add(1, 2));
        System.out.println(calc.Add(1.0f, 2.4f));
        System.out.println(calc.Add("1", "2"));
        int arr[] = { 1, 2, 3, 4 };
        System.out.println(calc.Add(arr));
        String arr_str[] = { "1", "2", "3" };
        System.out.println(calc.Add(arr_str));
    }

}
```

Question 02:

```java
import java.util.*;

enum Currency {
    PKR, INR, Pound, Dirham, BDT, JPY
}

class Conversion_Rate {
    public double value = 0;
    public Currency cur = Currency.PKR;

    public Conversion_Rate(double val, Currency cur) {
        this.cur = cur;
        this.value = val;
    }
}

class Converter {
    public ArrayList<Conversion_Rate> rates = new
ArrayList<Conversion_Rate>();

    public Converter() {
        Conversion_Rate pkr = new Conversion_Rate(236, Currency.PKR);
        Conversion_Rate pound = new Conversion_Rate(0.88, Currency.Pound);
```

```
        Conversion_Rate dirham = new Conversion_Rate(3.67,
Currency.Dirham);
        Conversion_Rate inr = new Conversion_Rate(79, Currency.INR);
        Conversion_Rate bdt = new Conversion_Rate(104, Currency.BDT);
        Conversion_Rate jpy = new Conversion_Rate(142, Currency.JPY);

        rates.add(pkr);
        rates.add(pound);
        rates.add(dirham);
        rates.add(inr);
        rates.add(bdt);
        rates.add(jpy);
    }

    private double getVal(Currency cur) {
        for (int i = 0; i < this.rates.size(); i++) {
            if (this.rates.get(i).cur == cur) {
                return this.rates.get(i).value;
            }
        }

        return -1;
    }

    public double convert(Currency from, double val, Currency to) {
        double result = 0;
        try {
            double val1 = getVal(to);
            val = val / val1;
            double val2 = getVal(from);
            result = val * val2;
            return result;
        } catch (ArithmeticException e) {
            System.out.println("Can't divide by zero");
        } finally {
            return result;
        }
    }
}
```

```
public class 1227971_Lab2_q2 {
    public static void main(String[] args) {
        Converter conv_Converter = new Converter();
        double res = conv_Converter.convert(Currency.PKR, 100,
Currency.INR);
        System.out.println(res);
    }

}
```

Question 03:

```
class Maze_Game {
    char[][] maze = { { 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o'
},
            { 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o' },
            { 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o' },
            { 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o' },
            { 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o' },
            { 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o' },
            { 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o' },
            { 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o', 'o' } };

    public void print() {
        System.out.println("");

System.out.println("----------------------------------------------------------
---------------------------------");
        for (int i = 0; i < 10; i++) {
            System.out
                    .println("" + maze[i][0] + ' ' + maze[i][1] + ' ' +
maze[i][2] + ' ' + maze[i][3] + ' ' + maze[i][4]
                            + ' ' + maze[i][5] + ' ' + maze[i][6] + ' ' +
maze[i][7] + ' ' + maze[i][8] + ' '
                            + maze[i][9] + "");
        }
```

```
System.out.println("-----------------------------------------------------------
---------------------------------");
        System.out.println("");
    }

    public int rand() {
        int num = (int) (Math.random() * 7);
        return num;
    }

    public int getRow(int num) {
        if (num >= 90 && num <= 100) {
            return 10;
        }
        int v = num % 10;
        if (v < 1) {
            return 1;
        }
        return v;
    }

    public int getCol(int num) {
        int val = num / 10;
        if (val < 1) {
            val = 1;
        }
        return val;
    }

    public void clear_maze() {
        for (int i = 0; i < 10; i++) {
            for (int j = 0; j < 10; j++) {
                this.maze[i][j] = 'o';
            }
        }
    }

    public void set_Marker(int r, int c) {
        if (r > 9) {
```

```
            r = 9;
        }
        if (c > 9) {
            c = 9;
        }
        this.maze[r][c] = 'x';
    }

    public void play() {
        int position = 0;

        while (position < 100) {
            int rand = rand();
            System.out.println("\n\nRandom number is: " + rand);
            position = position + rand;
            if (position > 100) {
                position = 100;
            }
            System.out.println("Position is: " + position);
            clear_maze();
            set_Marker(getRow(position) - 1, getCol(position) - 1);
            print();
        }

    }
}

public class l227971_Lab2_q3 { // i hate java, but atleast it shows the
exceptions
    public static void main(String[] args) {
        Maze_Game game = new Maze_Game();
        game.play();
    }
}
```

Question 04:

```
class King {
    public int array[][] = {
```

```
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 },
        { 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 }
};

public void converttoK() {
    int j = 4;
    boolean decreasing = true;
    for (int i = 0; i < 10; i++) {
        array[i][0] = 1;
        array[i][j] = 1;
        if (j == 0) {
            decreasing = false;
            j++;
        } else if (decreasing) {
            j--;
        } else if (decreasing == false) { // K on the kleft half
            j++;
        }
    }
}

public void converttoI() {
    for (int i = 0; i < 10; i++) {
        array[i][4] = 1;
        array[i][5] = 1;
    }
    for (int i = 0; i < 10; i++) {
        array[0][i] = 1;
    }
    for (int i = 0; i < 10; i++) {
        array[9][i] = 1;
    }
```

```
    }

    public void converttoN() {
        for (int i = 0; i < 10; i++) {
            array[i][0] = 1;
            array[i][9] = 1;
            for (int j = 0; j < 10; j++) {
                if (i == j) {
                    array[i][j] = 1;
                }
            }
        }
    }

    public void converttoG() {
        for (int i = 0; i < 10; i++) {
            for (int j = 0; j < 10; j++) {
                if (i == 0 || i == 9) {
                    array[i][j] = 1;
                } else if (j == 0 || j == 9) {
                    array[i][j] = 1;
                }
            }
        }
        for (int i = 1; i < 5; i++) {
            array[i][9] = 0;
        }

        for (int i = 5; i < 10; i++) {
            array[5][i] = 1;
        }
    }

    public void print() {
        for (int i = 0; i < 10; i++) {
            for (int j = 0; j < 10; j++) {
                System.out.print(array[i][j] + " ");
            }
            System.out.println();
        }
```

```
        System.out.println();
    }

    public void clear() {
        for (int i = 0; i < 10; i++) {
            for (int j = 0; j < 10; j++) {
                array[i][j] = 0;
            }
        }
    }
}

public class l227971_Lab2_q4 {
    public static void main(String args[]) {
        King king = new King();
        king.converttoK(); // K kind of looks weird
        king.print();
        king.clear();
        king.converttoI();
        king.print();
        king.clear();
        king.converttoN();
        king.print();
        king.clear();
        king.converttoG();
        king.print();
    }
}
```