Q1: ComputeDisplacement [10 points]

public class ComputeDisplacement {  
 public static void main(String[] args){  
 double x0, v0, t;  
 x0 = Double.*parseDouble*(args[0]);  
 v0 = Double.*parseDouble*(args[1]);  
 t = Double.*parseDouble*(args[2]);  
 final double g = 9.80665;  
 double answer = x0 + v0 \* t - (g \* Math.*pow*(t, 2)) / 2;  
 System.*out*.println(answer);  
 }  
}

Q2: LargeToSmall [10 points]

import java.util.Scanner;  
  
public class LargeToSmall {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
 System.*out*.print("Enter three integers: ");  
 int x = scanner.nextInt();  
 int y = scanner.nextInt();  
 int z = scanner.nextInt();  
 int max = Math.*max*(x, Math.*max*(y, z));  
 int min = Math.*min*(x, Math.*min*(y, z));  
 double result = Math.*pow*(max, min);  
 System.*out*.println(result);  
 scanner.close();  
 }  
}

Q3: RandomAverage [10 points]

import java.util.Random;  
  
public class RandomAverage {  
 public static void main(String[] args) {  
 Random random = new Random();  
 double sum = 0;  
 double min = 1;  
 double max = 0;  
 int n = 5;  
 for (int i = 0; i < n; i++) {  
 double randomNum = random.nextDouble();  
 sum += randomNum;  
 min = Math.*min*(randomNum, min);  
 max = Math.*max*(randomNum, max);  
 }  
 double average = sum / n;  
 System.*out*.println("Average: " + average);  
 System.*out*.println("Minimum: " + min);  
 System.*out*.println("Maximum: " + max);  
 }  
}

Q4: SentinelValue [6 points]

import java.util.Scanner;  
public class SentinelValue {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
 double sum = 0;  
 int count = 0;  
 int sentinel = -1;  
 double average;  
 double salary;  
 System.*out*.print("Enter salary values (-1 to terminate): ");  
 while ((salary = scanner.nextDouble()) != sentinel) {  
 sum += salary;  
 count++;  
 }  
 if (count > 0) {  
 average = sum / count;  
 System.*out*.println("Average salary: " + average);  
 } else {  
 System.*out*.println("Invalid inputs");  
 }  
 scanner.close();  
 }  
}

Q5: IsItSameRow [6 points]

import java.util.Scanner;  
public class IsItSameRow {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
 System.*out*.print("Enter an English word: ");  
 String word = scanner.nextLine().toLowerCase();  
 boolean row1 = false;  
 boolean row2 = false;  
 boolean row3 = false;  
 for (char c : word.toCharArray()) {  
 if ("qwertyuiop".contains(String.*valueOf*(c))) row1 = true;  
 else if ("asdfghjkl".contains(String.*valueOf*(c))) row2 = true;  
 else if ("zxcvbnm".contains(String.*valueOf*(c))) row3 = true;  
 }  
 if ((row1 && !row2 && !row3) || (!row1 && row2 && !row3) || (!row1 && !row2 && row3)) {  
 System.*out*.println("Yes");  
 } else {  
 System.*out*.println("No");  
 }  
 scanner.close();  
 }  
}

Q6: ConsectiveFour [5 points]

import java.util.Scanner;  
public class ConsectiveFour {  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
 System.*out*.print("Enter the number of values: ");  
 int size = scanner.nextInt();  
 int[] values = new int[size];  
 System.*out*.print("Enter the values: ");  
 boolean result = false;  
 for (int i = 0; i < size; i++) {  
 values[i] = scanner.nextInt();  
 if ( i >= 3 && !result && values[i] == values[i-1] && values[i] == values[i-2] && values[i] == values[i-3]) {  
 result = true;  
 }  
 }  
 if (result) {  
 System.*out*.println("The list has consecutive fours");  
 } else {  
 System.*out*.println("The list has no consecutive fours");  
 }  
 scanner.close();  
 }  
}

Q7: DotProduct [5 points]

import java.util.Scanner;  
  
public class DotProduct {  
 public static void main(String[] args) {  
 int m1, n1, m2, n2;  
 int[][] matrixA = {  
 {1, 2, 3},  
 {4, 5, 6}  
 };  
 int[][] matrixB = {  
 {7, 8},  
 {9, 10},  
 {11, 12}  
 };  
 //codes make input possible, uncomment if necessary  
 /\*  
 System.out.print("Enter the columns and rows for two matrices (m1 n1 m2 n2) (Enter -1 for default): ");  
 Scanner scanner = new Scanner(System.in);  
 if ((m1 = scanner.nextInt()) != -1) {  
 n1 = scanner.nextInt();  
 m2 = scanner.nextInt();  
 n2 = scanner.nextInt();  
 //System.out.printf("%d %d %d %d", m1, n1, m2, n2);  
 matrixA = new int[m1][n1];  
 matrixB = new int[m2][n2];  
 for (int m = 0; m < m1; m++) {  
 System.out.printf("Enter %d numbers for the row %d in matrixA: ", n1, m+1);  
 for (int n = 0; n < n1; n++) {  
 matrixA[m][n] = scanner.nextInt();  
 }  
 }  
 for (int m = 0; m < m2; m++) {  
 System.out.printf("Enter %d numbers for the row %d in matrixB: ", n2, m+1);  
 for (int n = 0; n < n2; n++) {  
 matrixB[m][n] = scanner.nextInt();  
 }  
 }  
 }  
 \*/  
 m1 = matrixA.length;  
 n1 = matrixA[0].length;  
 m2 = matrixB.length;  
 n2 = matrixB[0].length;  
 if (n1 != m2) {  
 System.*out*.println("Error: Number of columns in the first matrix must be equal to the number of rows in the second matrix.");  
 }  
 int[][] result = new int[m1][n2];  
 for (int i = 0; i < m1; i++) {  
 for (int j = 0; j < n2; j++) {  
 for (int k = 0; k < n1; k++) {  
 result[i][j] += matrixA[i][k] \* matrixB[k][j];  
 }  
 }  
 }  
 // System.out.println("Resulting Matrix:");  
 // Print the first row of the resulting matrix  
 for (int j = 0; j < n2; j++) {  
 System.*out*.print(result[0][j] + " ");  
 }  
 System.*out*.println();  
 // Print the rest row of the resulting matrix  
 /\*  
 for (int i = 1; i < m1 - 1; i++) {  
 for (int j = 0; j < n2; j++) {  
 System.out.print(result[i][j] + " ");  
 }  
 System.out.println();  
 }  
 \*/  
 // Print the last row of the resulting matrix  
 for (int j = 0; j < n2; j++) {  
 System.*out*.print(result[m1 - 1][j] + " ");  
 }  
 }  
}

Use “Ctrl A” if there’s codes isn’t showed weell. Just in case, next page provide next part of codes.

int[][] result = new int[m1][n2];  
 for (int i = 0; i < m1; i++) {  
 for (int j = 0; j < n2; j++) {  
 for (int k = 0; k < n1; k++) {  
 result[i][j] += matrixA[i][k] \* matrixB[k][j];  
 }  
 }  
 }  
 // System.out.println("Resulting Matrix:");  
 // Print the first row of the resulting matrix  
 for (int j = 0; j < n2; j++) {  
 System.*out*.print(result[0][j] + " ");  
 }  
 System.*out*.println();  
 // Print the rest row of the resulting matrix  
 /\*  
 for (int i = 1; i < m1 - 1; i++) {  
 for (int j = 0; j < n2; j++) {  
 System.out.print(result[i][j] + " ");  
 }  
 System.out.println();  
 }  
 \*/  
 // Print the last row of the resulting matrix  
 for (int j = 0; j < n2; j++) {  
 System.*out*.print(result[m1 - 1][j] + " ");  
 }  
 }  
}