# **GROUP MEMBERS**

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/\*1. The program is to show one of the numbers enter by the user is the largest or smallest\*/

//imported files /classes can go here

import java.util.Scanner;

public class Methods{

public static void main(String[]args){

findLargestAndSmallestNumber();

}

public static void findLargestAndSmallestNumber(){

//Creating an object of the scanner class

Scanner scanner = new Scanner(System.in);

//Declaring variables

int fnum,snum,tnum;

//Ask user to enter first number

System.out.println("Enter the first number");

//getting the first number

fnum = scanner.nextInt();

//Ask user to enter second number

System.out.println("Enter the second number");

//getting the second number

snum = scanner.nextInt();

//Ask user to enter third number

System.out.println("Enter the third number");

//getting the third number

tnum = scanner.nextInt();

int largest = fnum;

int smallest = fnum;

if (snum > largest) {

largest = snum;

}

if (tnum > largest) {

largest = tnum;

}

if (snum < smallest) {

smallest = snum;

}

if (tnum < smallest) {

smallest = tnum;

}

System.out.println("The smallest number: " + fnum);

System.out.println("The largest number: " + fnum);

System.out.println(fnum + " is your largest and " + fnum + " is your smallest number.");

}

}

/\*2. This proram is used to enter the score of a student by the lecturer and be able

to find the average of three units that are taken by the student\*/

import java.util.Scanner;

public class LecturersScore {

public static void main(String[] args) {

getAndComputeScore();

}

public static void getAndComputeScore() {

Scanner input = new Scanner(System.in);

//getting the variables from the user

System.out.println("Enter score for Java Programming: ");

double javaScore = input.nextDouble();

System.out.println("Enter score for Networking: ");

double networkingScore = input.nextDouble();

System.out.println("Enter score for Maths: ");

double mathsScore = input.nextDouble();

System.out.println("Score for Java Programming is: " + javaScore);

System.out.println("Score for Networking is: " + networkingScore);

System.out.println("Score for Maths is: " + mathsScore);

//calculating the average of the student's scores

double average = (javaScore + networkingScore + mathsScore) /3;

System.out.println("The average is: " + average);

}

}

/\*3a.This program is to confirm if the year

entered by user if it is a leeap year or not\*/

import java.util.Scanner;

public class LeapYear{

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a year: ");

int year = scanner.nextInt();

if (isLeapYear(year)) {

System.out.println("The year you entered, %d, is a leap year.%n", year);

}

else {

System.out.println("The year you entered, %d, is not a leap year.%n", year);

}

}

public static boolean isLeapYear(int year) {

return year % 4 == 0 && (year % 100 != 0 || year % 400 == 0);

}

}

/\*3b. This program is used to calculate the area of the triangle\*/

import java.util.Scanner;

public class TriangleArea{

//declaring variables

double base;

double height;

public void inputTriangleDimensions() {

Scanner scanner = new Scanner(System.in);

//getting input from the user

System.out.println("Enter the base of the triangle: ");

base = scanner.nextDouble();

System.out.println("Enter the height of the triangle: ");

height = scanner.nextDouble();

}

//Method to compute the area of the triangles

public double TriangleArea() {

return 0.5 \* base \* height;

}

//Method for displaying the area of the triangle

public void displayTriangleArea() {

double area = TriangleArea();

System.out.printf("The area of the triangle is: %.2f%n", area);

}

public static void main(String[] args) {

TriangleArea triobj = new TriangleArea();

triobj.inputTriangleDimensions();

triobj.displayTriangleArea();

}

}

/\*Question 1a. This program is used to display the number entered by the user if it is a prime number or not\*/

public class PrimeNumbers {

public static Boolean isPrime(int num) {

if (num <= 1) {

return false;

}

for(int counter = 2; counter <= Math.sqrt(num); counter++) {

if(num % counter == 0) {

return false;

}

}

return true;

}

public static void main(String[] args) {

System.out.println("Prime numbers between 1 and 500: ");

for(int counter = 1; counter <= 500; counter++) {

if(isPrime(counter)) {

System.out.print(counter + " ");

}

}

}

}

/\*Question 1b.This program is to show the sequence used in fibonacci\*/

public class FibonnacciSequence {

public static void generateFibonnacci(int numbers) {

int number = 1, number = 2, number;

System.out,.print("Fibonnacci sequence of " + number + " terms: ");

System.out.print(a + " " + b + " ");

for (int number = 3; number <= number; number++) {

number = number + number;

System.out.print(number + " ");

number = number;

number = number;

}

}

public static void main(String[] args) {

generateFibonnacci(10);

}

}

/\*Question 1c.This program is to display the even fibonacci numbers\*/

public class EvenFibonacciSum {

public static long sumEvenFibonacci(int max) {

int counter = 1, number = 2;

long sum = 0;

while(counter <= max) {

if (number % 2 == 0) {

sum += number;

}

int waru = counter + number;

counter = number;

number = waru;

}

return sum;

}

public static void main(String[] args) {

int max = 4000000; //four million

long sum = sumEvenFibonacci(max);

System.out.println("Sum of even-valued Fibonacci terms below " + max + " is: " + sum);

}

}

/\*Question 2. This program is to show whether the number entered by the user is a palindrome or not then display the result\*/

public class PalindromeChecker {

public static void main(String[] args) {

// Create the frame

JFrame frame = new JFrame("Palindrome Checker");

frame.setSize(300, 200);

frame.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

// Create the panel

JPanel panel = new JPanel();

frame.add(panel);

placeComponents(panel);

// Set the frame visibility to true

frame.setVisible(true);

}

private static void placeComponents(JPanel panel) {

panel.setLayout(null);

// Create a label

JLabel userLabel = new JLabel("Enter number:");

userLabel.setBounds(10, 20, 80, 25);

panel.add(userLabel);

// Create a text field

JTextField userText = new JTextField(20);

userText.setBounds(100, 20, 165, 25);

panel.add(userText);

// Create a button

JButton checkButton = new JButton("Check");

checkButton.setBounds(10, 80, 80, 25);

panel.add(checkButton);

// Create a label for the result

JLabel resultLabel = new JLabel("");

resultLabel.setBounds(100, 80, 165, 25);

panel.add(resultLabel);

// Add action listener to the button

checkButton.addActionListener(new ActionListener() {

@Override

public void actionPerformed(ActionEvent e) {

String input = userText.getText();

if (isPalindrome(input)) {

resultLabel.setText("Palindrome");

} else {

resultLabel.setText("Not a Palindrome");

}

}

});

}

private static boolean isPalindrome(String input) {

int length = input.length();

for (int i = 0; i < length / 2; i++) {

if (input.charAt(i) != input.charAt(length - i - 1)) {

return false;

}

}

return true;

}

}

/\*Question 3. This program is to store 15 values as integer and stores the values input by the user in an array\*/

public class ArrayOperations {

private static int[] values = new int[15];

private static int index = 0;

public static void main(String[] args) {

JFrame frame = new JFrame("Array Operations");

frame.setSize(400, 300);

frame.setDefaultCloseOperation(JFrame.EXIT\_ON\_CLOSE);

JPanel panel = new JPanel();

frame.add(panel);

placeComponents(panel);

frame.setVisible(true);

}

private static void placeComponents(JPanel panel) {

panel.setLayout(null);

JLabel instructionsLabel = new JLabel("Enter 15 integers:");

instructionsLabel.setBounds(10, 20, 200, 25);

panel.add(instructionsLabel);

JTextField numberField = new JTextField(10);

numberField.setBounds(10, 50, 100, 25);

panel.add(numberField);

JButton addButton = new JButton("Add Number");

addButton.setBounds(120, 50, 150, 25);

panel.add(addButton);

JTextArea outputArea = new JTextArea();

outputArea.setBounds(10, 80, 360, 100);

outputArea.setEditable(false);

panel.add(outputArea);

JLabel searchLabel = new JLabel("Search number:");

searchLabel.setBounds(10, 190, 100, 25);

panel.add(searchLabel);

JTextField searchField = new JTextField(10);

searchField.setBounds(120, 190, 100, 25);

panel.add(searchField);

JButton searchButton = new JButton("Search");

searchButton.setBounds(230, 190, 100, 25);

panel.add(searchButton);

JTextArea searchResult = new JTextArea();

searchResult.setBounds(10, 220, 360, 50);

searchResult.setEditable(false);

panel.add(searchResult);

addButton.addActionListener(new ActionListener() {

@Override

public void actionPerformed(ActionEvent e) {

if (index < 15) {

int number = Integer.parseInt(numberField.getText());

values[index++] = number;

numberField.setText("");

if (index == 15) {

StringBuilder sb = new StringBuilder("Values in array: ");

for (int value : values) {

sb.append(value).append(" ");

}

outputArea.setText(sb.toString());

}

}

}

});

searchButton.addActionListener(new ActionListener() {

@Override

public void actionPerformed(ActionEvent e) {

int searchNumber = Integer.parseInt(searchField.getText());

boolean found = false;

for (int i = 0; i < values.length; i++) {

if (values[i] == searchNumber) {

searchResult.setText("The number found at index " + i);

found = true;

break;

}

}

if (!found) {

searchResult.setText("Number not found in this array.");

}

}

});

JButton reverseButton = new JButton("Reverse Array");

reverseButton.setBounds(10, 270, 150, 25);

panel.add(reverseButton);

reverseButton.addActionListener(new ActionListener() {

@Override

public void actionPerformed(ActionEvent e) {

int[] reversedArray = new int[15];

for (int i = 0; i < values.length; i++) {

reversedArray[i] = values[values.length - 1 - i];

}

StringBuilder sb = new StringBuilder("Reversed array: ");

for (int value : reversedArray) {

sb.append(value).append(" ");

}

outputArea.setText(sb.toString());

}

});

JButton sumProductButton = new JButton("Sum and Product");

sumProductButton.setBounds(170, 270, 200, 25);

panel.add(sumProductButton);

sumProductButton.addActionListener(new ActionListener() {

@Override

public void actionPerformed(ActionEvent e) {

int sum = 0;

long product = 1;

for (int value : values) {

sum += value;

product \*= value;

}

outputArea.setText("Sum: " + sum + "\nProduct: " + product);

}

});

}