OODP workshop 4

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1. What are different types of loops in java? Explain each of them with proper syntax.

Ans:

In Java, there are four types of loops:

for loop

enhanced for loop (or for-each loop)

while loop

do-while loop

Here's an explanation of each loop type with proper syntax:

for loop:

The for loop is used when the number of iterations is known in advance. It consists of three parts: initialization, condition, and iteration.

for (initialization; condition; iteration) {

// loop body

}

//Example: for loop

for (int i = 0; i < 5; i++) {

System.out.println("Value of i: " + i);

}

Output:

Value of i: 0

Value of i: 1

Value of i: 2

Value of i: 3

Value of i: 4

enhanced for loop (or for-each loop):

The enhanced for loop, or for-each loop, is used to iterate over arrays or collections in a more concise and readable manner.

for (dataType variable : array/collection) {

// loop body

}

Example:

String[] names = {"Alice", "Bob", "Charlie"};

for (String name : names) {

System.out.println(name);

}

Output:

Alice

Bob

Charlie

while loop:

The while loop is used when the number of iterations is not known in advance. It continues to execute the loop body as long as the given condition is true.

while (condition) {

// loop body

}

Example:

int count = 0;

while (count < 3) {

System.out.println("Count is: " + count);

count++;

}

Output:

Count is: 0

Count is: 1

Count is: 2

do-while loop:

The do-while loop is similar to the while loop, but it executes the loop body at least once, even if the condition is false.

do {

// loop body

} while (condition);

Example:

int num = 10;

do {

System.out.println("Value of num: " + num);

num++;

} while (num < 5);

Output:

Value of num: 10

2. Write a program to ask the user to enter a number and print count down from that

number to 0.

Ans:

import java.util.Scanner;

public class CountdownProgram {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int number = scanner.nextInt();

countdown(number);

}

public static void countdown(int num) {

for (int i = num; i >= 0; i--) {

System.out.println(i);

}

}

}

3. Write a program to ask user to enter the temperature of seven days and then find out

the average temperature and print the results.

Ans:

import java.util.Scanner;

public class AverageTemperature {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

double[] temperatures = new double[7];

double sum = 0;

// Get temperatures for seven days

System.out.println("Enter the temperatures for seven days:");

for (int i = 0; i < 7; i++) {

System.out.print("Day " + (i + 1) + ": ");

temperatures[i] = scanner.nextDouble();

sum += temperatures[i];

}

// Calculate the average temperature

double average = sum / 7;

// Print the result

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

}

}

4. Write a program to ask user a value and make sure that value is between 3 and 6

inclusive. Keep asking the user until user enters a valid value and display a success

message and print error when user enter invalid value.

Ans:

import java.util.Scanner;

public class ValueValidation {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

int value;

boolean isValid = false;

do {

System.out.print("Enter a value between 3 and 6 (inclusive): ");

value = scanner.nextInt();

if (value >= 3 && value <= 6) {

isValid = true;

System.out.println("Success! You entered a valid value.");

} else {

System.out.println("Error: Invalid value. Please try again.");

}

} while (!isValid);

}

}