

**Faculty of Computing**

IT1120 – Introduction to Programming

Year 1 Semester 1 (2024)

# Tutorial 02

1. Write pseudo code to solve the below problems and convert to java programs
   * 1. Find the sum and average of two numbers

**MAIN**

**DEFINE num1, num2, sum, average AS FLOAT**

**INPUT num1**

**INPUT num2**

**sum = num1 + num2**

**average = sum / 2.0**

**PRINT sum, average**

**ENDMAIN**

**import java.util.Scanner;**

**public class SumAndAverage**

**{**

**public static void main(String[] args)**

**{**

**// Define variables**

**float num1, num2, sum, average;**

**// Create a scanner object for input**

**Scanner input = new Scanner(System.in);**

**// Input two numbers**

**System.out.print("Enter the first number: ");**

**num1 = input.nextFloat();**

**System.out.print("Enter the second number: ");**

**num2 = input.nextFloat();**

**// Calculate the sum of the two numbers**

**sum = num1 + num2;**

**// Calculate the average of the two numbers**

**average = sum / 2.0;**

**// Output the sum and average**

**System.out.println("The sum of the two numbers is: " + sum);**

**System.out.println("The average of the two numbers is: " + average);**

**}**

**}**

* + 1. Calculate the perimeter and area of a rectangle given the length and the width

**MAIN**

**DEFINE length, width, perimeter, area AS FLOAT**

**INPUT length**

**INPUT width**

**perimeter = 2 \* (length + width)**

**area = length \* width**

**PRINT perimeter, area**

**ENDMAIN**

**import java.util.Scanner;**

**public class RectangleCalculator**

**{**

**public static void main(String[] args)**

**{**

**// Define variables**

**float length, width, perimeter, area;**

**// Create a scanner object for input**

**Scanner input = new Scanner(System.in);**

**// Input the length of the rectangle**

**System.out.print("Enter the length of the rectangle: ");**

**length = input.nextFloat();**

**// Input the width of the rectangle**

**System.out.print("Enter the width of the rectangle: ");**

**width = input.nextFloat();**

**// Calculate the perimeter of the rectangle**

**perimeter = 2 \* (length + width);**

**// Calculate the area of the rectangle**

**area = length \* width;**

**// Output the perimeter and area**

**System.out.println("The perimeter of the rectangle is: " + perimeter);**

**System.out.println("The area of the rectangle is: " + area);**

**}**

**}**

* + 1. In a lab, the weight of 1000 seeds was found to be 5x10-5g. Calculate and print the weight of one seed.

**MAIN**

**DEFINE totalWeight, weightPerSeed AS FLOAT**

**DEFINE numberOfSeeds AS INTEGER**

**totalWeight = 5 \* 10^-5**

**numberOfSeeds = 1000**

**weightPerSeed = totalWeight / numberOfSeeds**

**PRINT weightPerSeed**

**ENDMAIN**

**public class SeedWeightCalculator**

**{**

**public static void main(String[] args)**

**{**

**// Define variables**

**float totalWeight, weightPerSeed;**

**int numberOfSeeds;**

**// Initialize values**

**totalWeight = 5 \* 0.00001; // 5 \* 10^-5 g (0.00001 is 10^-5)**

**numberOfSeeds = 1000;**

**// Calculate the weight of one seed**

**weightPerSeed = totalWeight / numberOfSeeds;**

**// Output the weight of one seed**

**System.out.println("The weight of one seed is: " + weightPerSeed + " g");**

**}**

**}**

* + 1. Convert a temperature given in Fahrenheit into Celsius. Celsius = 5 \* (Fahrenheit - 32) / 9

**MAIN**

**DEFINE fahrenheit, celsius AS FLOAT**

**INPUT fahrenheit**

**celsius = 5 \* (fahrenheit - 32) / 9.0**

**PRINT celsius**

**ENDMAIN**

**import java.util.Scanner;**

**public class TemperatureConverter**

**{**

**public static void main(String[] args)**

**{**

**// Define variables**

**float fahrenheit, celsius;**

**// Create a scanner object for input**

**Scanner input = new Scanner(System.in);**

**// Input temperature in Fahrenheit**

**System.out.print("Enter temperature in Fahrenheit: ");**

**fahrenheit = input.nextFloat();**

**// Convert Fahrenheit to Celsius**

**celsius = 5 \* (fahrenheit - 32) / 9.0;**

**// Output the temperature in Celsius**

**System.out.println("Temperature in Celsius: " + celsius);**

**}**

**}**

1. Enter the price of 1kg of rice and the no of kilograms you want to buy from the keyboard. Write pseudo code to find the amount you have to pay. The supermarket is giving 10% discount to the total bill. Modify the pseudo code and find the amount you have to pay after considering the discount.

Test your program for the below test cases.

|  |  |  |
| --- | --- | --- |
|  | **Price of 1kg (Rs)** | **No of kilograms** |
| **Test case 1** | 250.00 | 5 |
| **Test case 2** | 550.00 | 2 |
| **Test case 3** | 650.00 | 4 |

**MAIN**

**DEFINE pricePerKg, totalAmount, discountAmount, finalAmount AS FLOAT**

**DEFINE numberOfKg AS INTEGER**

**INPUT pricePerKg**

**INPUT numberOfKg**

**totalAmount = pricePerKg \* numberOfKg**

**discountAmount = totalAmount \* 0.10**

**finalAmount = totalAmount - discountAmount**

**PRINT "Total amount to pay after discount: ", finalAmount**

**ENDMAIN**

1. An employee is paid an additional amount to his monthly salary as OT amount. Write pseudo code to input the monthly salary, no of OT hours and OT hourly rate from the keyboard and find the total salary.

Total salary = monthly salary + OT amount

Test your program for the below test cases

**MAIN**

**DEFINE monthlySalary, otHourlyRate, otAmount, totalSalary AS FLOAT**

**DEFINE noOfOTHours AS INTEGER**

**INPUT monthlySalary**

**INPUT noOfOTHours**

**INPUT otHourlyRate**

**otAmount = noOfOTHours \* otHourlyRate**

**totalSalary = monthlySalary + otAmount**

**PRINT "Total salary: ", totalSalary**

**ENDMAIN**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Monthly salary (Rs)** | **No of OT hrs** | **OT hourly rate (Rs)** |
| **Test case 1** | 45000.00 | 10 | 800.00 |
| **Test case 2** | 55000.00 | 7 | 850.00 |

1. Write a pseudocode to enter a rupee amount and print the number of 5000/=, 1000/=, 500/=, 200/=, 100/=, 50/=, 20/=, 10/=, 5/=, 2/=, 1/= notes and coins in that amount.

e.g. Amount = 2754

Your program should print

5000 Notes - 0

1000 Notes – 2

500 Notes - 1 200 Notes - 1

100 Notes - 0

50 Notes - 1 20 Notes - 0 10 Notes - 0 05 Notes - 0

02 Notes - 2

01 Notes - 0

Test your program

**MAIN**

**DEFINE amount, remainingAmount, num5000, num1000, num500, num200, num100, num50, num20, num10, num5, num2, num1 AS INTEGER**

**INPUT amount**

**remainingAmount = amount**

**num5000 = remainingAmount / 5000**

**remainingAmount = remainingAmount % 5000**

**num1000 = remainingAmount / 1000**

**remainingAmount = remainingAmount % 1000**

**num500 = remainingAmount / 500**

**remainingAmount = remainingAmount % 500**

**num200 = remainingAmount / 200**

**remainingAmount = remainingAmount % 200**

**num100 = remainingAmount / 100**

**remainingAmount = remainingAmount % 100**

**num50 = remainingAmount / 50**

**remainingAmount = remainingAmount % 50**

**num20 = remainingAmount / 20**

**remainingAmount = remainingAmount % 20**

**num10 = remainingAmount / 10**

**remainingAmount = remainingAmount % 10**

**num5 = remainingAmount / 5**

**remainingAmount = remainingAmount % 5**

**num2 = remainingAmount / 2**

**remainingAmount = remainingAmount % 2**

**num1 = remainingAmount**

**PRINT "5000 Notes - ", num5000**

**PRINT "1000 Notes - ", num1000**

**PRINT "500 Notes - ", num500**

**PRINT "200 Notes - ", num200**

**PRINT "100 Notes - ", num100**

**PRINT "50 Notes - ", num50**

**PRINT "20 Notes - ", num20**

**PRINT "10 Notes - ", num10**

**PRINT "05 Notes - ", num5**

**PRINT "02 Notes - ", num2**

**PRINT "01 Notes - ", num1**

**ENDMAIN**