

**SUBJECT : PROGRAMMING IN JAVA**

**SUBJECT CODE : CSI26W1**

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**LEARNING UNIT: 2**

**PRACTICAL EXERCISE 1**

**Instructions:**

- This task may be completed in groups (maximum of 3 students per group)
1. Choose the best data type for each of the following so that any reasonable value is accommodated but no memory storage is wasted. Give an example of a typical value that would be held by the variable, and explain why you chose the type you did. Put your answers in a table having 3 columns (data type, typical value, explanation).
    - a) The number of people living in a single household
    - b) The year Nelson Mandela became a president
    - c) The total number of people who attended a Kaizer Chiefs vs. Orlando Pirates match at FNB Stadium
    - d) The amount of money left in your bank account
    - e) The population of the earth
    - f) The number of passengers on a bus
    - g) The price of a luxury Mercedes Benz SUV
  2. Write a Java program that declares named constants to represent the number of centimeters, inches, meters, and kilometers in a mile. Also, declare a variable named miles to represent a number of miles and assign a value to it. Compute and display, with explanatory text, the value in centimeters, inches, meters, and kilometers.
  3. Convert the program in (2 above) to an interactive application. Instead of assigning a value to the miles variable, accept the value from the user as input.
  4. Nzuzo Farming Pride sells organic white eggs to local customers. It charges R59.99 for a dozen eggs or R8.50 for individual eggs that are not part of a dozen. Write a program that prompts a user for the number of eggs in the order and then displays the amount owed with a full explanation.  
*For example, typical output might be:*  
You ordered 27 eggs. That's 2 dozen at R59.99 per dozen and 3 loose eggs at R8.50 each for a total of R145.48.

5. Write a program that accepts as user input the names of three political structures on campus and the number of votes each received in the last campus elections. Display the percentage of the vote each political structure received (EFFSC, SASCO and ANCYL).

6. Create an application named Percentages whose main() method holds two double variables, and prompt the user for values. Pass both variables to a method named computePercent() that displays the two values and the value of the first number as a percentage of the second one. For example, if the numbers are 2.0 and 5.0, the method should display a statement similar to 2.0 is 40 percent of 5.0. Then call the method a second time, passing the values in reverse order.

7. The ABSA Life Insurance division computes annual policy premiums based on the age the customer turns in the current calendar year. The premium is computed by taking the decade of the customer's age, adding 15 to it, and multiplying by 20. For example, a 34-year-old would pay R6 660.00, which is calculated by adding the decades (3) to 15 and then multiplying by 20. Write an application that prompts a user for the current year and a birth year. Pass both to a method that calculates and returns the premium amount, and then display the returned amount.

8. Create a class named PhotoFrame that includes three overloaded computePrice() methods for the XYZ Art & Gallery company, which sells photo frames.

When computePrice() receives no parameters, the method computes the price of one photo book at R250, adds 15 percent VAT, and returns the total due.

When computePrice() receives one parameter, it represents the quantity ordered. Multiply the value by R250, add 15 percent VAT, and return the total due.

When computePrice() receives two parameters, they represent the quantity ordered and a reward amount. Multiply the quantity by R250, reduce the result by the reward amount, add 15 percent VAT, and then return the total due.

Write a main() method that prompts the user for the number of photo frames ordered, prompts for a reward amount, and tests all three overloaded methods.

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