Note: Do the recording only for last question.

Introduction to Object-Oriented Programming: Classes and objects, fields and methods, arguments and parameters, constructors, class and instance data values

1. Write a program to create a 'Rectangle' class with a constructor having length and width as its parameters. Calculate the perimeter and area of a rectangle with length 6 units and width 4 units using the class.

2. Create a class "Vehicle" that models a vehicle.
 a. Implement methods to set and get the vehicle's make, model, and year.
 b. Define classes "Car" and "Motorcycle" that inherit from the Vehicle class, with additional properties specific to each type.
      c. Write a display method to print all details.
 d. Write a main method to create instances of both Car and Motorcycle, set their properties, and display the information.

Control Flow: Sequence, selection, repetition, explicit control-flow statements

3. Write a program that checks whether a given year is a leap year or not. Prompt the user to enter a year, and then determine and display whether it is a leap year or not. (A leap year is divisible by 4, but not divisible by 100 unless it is also divisible by 400.)

4. Write a program that prints the first 10 multiples of a given number. Prompt the user to enter a number, and then calculate and display the first 10 multiples of that number.

Arrays and Collections: 1D & 2D Arrays, arrays of objects, for-each loop, passing arrays to methods, searching and sorting in arrays

5. Write a program that prompts the user to enter a sentence. Split the sentence into words using the space delimiter and store them in an array. Use a for-each loop to iterate over the array and print each word in reverse order.

6. Write a program that generates an array of numbers getting from user. Implement methods to search for a specific number in the array and return its index, and to sort the array in ascending order using a sorting algorithm of your choice. Test both methods with appropriate input and display the results.