Exercises:

1. Write a program that will ask the user to enter the width and length of a rectangle, and then display the area. The program should call the following methods:
    - getLength – This method should ask the user to enter the rectangle's length and then return that value as double
    - getWidth – The is method should ask the user to enter the rectangle's width, and then return that value as double.
    - getArea – This method should accept the rectangle's length and width as arguments, and return the rectangle's area. The area is calculated by multiplying the length by width.
    - displayData – This method should accept the rectangle's length, width, and area as arguments, and display them in an appropriate message on the screen.

2. The formula for converting a temperature from Farenheit to Celsius is: C = 5/9 (F-32) where F is the Farenheit temperature as an argument. And C is the Celsius temperature. Write a method named celsius that accepts a Farenheit temperature as an argument. The method should return the temperature converted to Celsius. Demonstrate the method by calling it in a loop that displays a table of the Farenheit temperatures 0 through 20 and their Celsius equivalents.

3. Write a program that asks the user to enter two numbers one of type int and another of type double. Write two methods with the same name (e.g. getSquare()) to calculate the square of each number. Write two other methods to calculate the cube (e.g. getCube()) of each number (int and double) that makes use of the getSquare() methods. Cube of number N = N * N * N.

4. Write a program that asks the user to enter five test scores. The program should display a letter grade for each score and the average test score. Write the following methods in the program:
    - calcAverage–This method should accept five test scores as arguments and return the average of the scores

- determineGrade–This method should accept a test score as an argument and return a letter grade for the score, based on the following grading scale:

Score	Letter Grade
90-100	A
80-89	B
70-79	C
60-69	D
Below 60	F

5. Write a program that inputs the radius of a circle from the user. The program should provide the user with the following choices.
   (1) Enter A or a to calculate area of circle Formula: Area = PI * radius * radius
   (2) Enter C or c to calculate circumference of circle Formula: Circumference = 2 *PI * radius
   (3) Enter D or d to calculate diameter of circle Formula: Diameter = 2 * radius

   The program should read the choice from the user, perform calculations and display the relevant result. If the user enters an invalid choice, display a relevant error message. Write methods to calculate area, circumference and diameter.

6. Write a method isEven() which takes an integer as an argument and returns true if the argument is even, or false otherwise. Demonstrate the method in a complete program.
   Sample Run:
   Enter a number: 5
   Output: This is not an even number

7. Write a method getOccurences() which takes a string and a character as arguments and returns the number of occurrences of that character in the string as an integer. The method has to be case sensitive.
   Demonstrate the method using a program. Sample
   Run:
   Enter a string
   Abcadbe
   Enter a character b

Output: ‘b’ occurs twice in “Abcadbe”

8. Write a method that returns a count of all the vowels in the string str.

9. Write a method int CountWords(String str) that returns the count of all words in the string str. Words are separated by spaces. For example: “Java is a language” should return

10. Write a method isPrime() that takes an integer as an argument and determines whether the integer is a prime number or not. A number is prime if its only positive divisor is 1 or itself. For example, 2, 3, 5 and 7 are prime numbers, but 4, 6, 8, and 9 are not. Use this method in a program to print the first 50 prime numbers greater than 1, with 10 numbers printed in each line.

11. Write a recursive method public static String reverse(String str) that computes the reverse of a string. For example, to reverse “flow” should return “wolf”.

12. Write a program that validates a password input by the user using the following rules:
    - The password must be at least 8 characters long
    - The password must have at least one uppercase and one lowercase letter
    - The password must have at least one digit

    Write a program that asks for a password, then asks again to confirm it. If the passwords don’t match or the rules are not fulfilled, prompt again. Your program should include a method that checks whether a password is valid.

13. Write a recursive method

Public static Boolean isPalindrome(String str)

That returns true if str is a palindrome, that is a word that is the same when reversed.