Disclaimer:

You will submit your file to an assignment that is given through MS teams. **Your filename should be "Quiz1_yourStudentNumber.java". So if your student number is 202051056016, then the file you need to submit will have the name Quiz1_202051056016.java. If your file does not include your student number in its name, I cannot grade it. This doesn't necessarily means that your file will include '.java' in the name, but its file extension will be java.**

Submissions made after the deadline will **not be accepted,** be sure to submit your work before the due date and **make sure to click turn in button.** Your code will be automatically graded, so be sure to have only one public class in your file that has the same name with your file. Failure to do so may result in you receiving 0 from this quiz. You will turn in a single java file.

Questions:

1. Palindrome String:
    a. Write a method **generatePalindrome** that generates and returns a lowercase string with random characters that is a palindrome given length **n**.
    b. Write a method **reverse** that reverses a given string and returns it.
    c. Write a method **isPalindrome** that returns whether a given string is palindrome or not.

2. Write a method **compareNames** that takes two names returns nothing. If the names are of equal length, check if they are the same, display that they are the same if they are. If they are not the same, print the second to last character of first string (the one before the last character). If their length is different, check if one of the given names include the other name and print differing characters in the containing string in all uppercase (for example if the names are Ayse and Aysegul, you should print GUL). If none of the names include the other one, print second name from second to last characters (from second character to end of the string).

3. Write a method **cylinder** that takes integers **x**, **y** which represents a point (x, y) on a 2D plane on a circle's edge. Circle's center is on the origin. Additionally, **cylinder** method takes an integer **height** which represents the height of the cylinder. (Use **n** = 0 for all π calculations)
   - Display surface area of the cylinder up to 2 decimal places.
   - Display volume of the cylinder up to 3 decimal places.
   - Display total perimeter of shapes forming this cylinder up to 2 decimal places.

   a. Write a method **calculatePI** that returns the π calculated with **n** terms according to below formula.

$$\pi = \begin{cases} Math.PI, & n = -1 \\ 3, & n = 0 \\ 4\sum_{i=1}^{n} \frac{(-1)^{i+1}}{2i-1}, & n \geq 1 \end{cases}$$

   b. Write a method **distance** that calculates the radius of the circle given **x** and **y**.
   c. Write **two** methods **area** which calculates the area of the circle given radius of the circle, and the area of the rectangle given width and height.
   d. Write a method **circumference** that calculates the circumference of the circle given radius.
   e. Write a method **perimeter** that calculates the perimeter of the rectangle given its width and height.

4. Write a method **isLicensePlateValid** that checks a given license plate is in Turkish format. The method should take license plate as parameter. You have to check following formats without spaces: "99X9999", "99XX999", "99XXX99". First two digits represent provinces (There are 81 provinces). X represents uppercase letters except Turkish characters and X, Q, W. 9 represents numbers.

5. Write a method **weekDay** that takes a day number (1-7) as input and returns the corresponding day name without using if-else (Monday-Sunday). if input is not 1-7 return "invalid".