**Name:**

**Advanced Programming in C++**

**Lab Exercise 5.22.2024**

When you have completed these problems, submit your documented source code including a sample output.

1. Given a number n, write a function that returns PI to n decimal places.

Examples

myPi(5) ➞ 3.14159

myPi(4) ➞ 3.1416

myPi(15) ➞ 3.141592653589793

Notes

* n will not be above 15, to keep this challenge simple.
* Round up the last digit if the next digit in PI is greater or equal to 5 (see second example above).
* The return value must be a number, not a string.
* A simple method for calculating pi is 2 \* acos(0.0).

1. Given two strings, create a function that returns the total number of unique characters from the combined string.

Examples

countUnique("apple", "play") ➞ 5

// "appleplay" has 5 unique characters:

// "a", "e", "l", "p", "y"

countUnique("sore", "zebra") ➞ 7

// "sorezebra" has 7 unique characters:

// "a", "b", "e", "o", "r", "s", "z"

countUnique("a", "soup") ➞ 5

Notes

* Each word will contain at least one letter.
* All words will be lower cased.

1. Create a function which takes in a number n as input and returns all numbers up to and including n joined in a string. Separate each digit from each other with the character "-".

Examples

joinDigits(4) ➞ "1-2-3-4"

joinDigits(11) ➞ "1-2-3-4-5-6-7-8-9-1-0-1-1"

joinDigits(15) ➞ "1-2-3-4-5-6-7-8-9-1-0-1-1-1-2-1-3-1-4-1-5"

Notes

* Remember to start at 1 and include n as the last number.
* The value of n is limited to a 2-digit number.