



# LAB #1: GETTING STARTED WITH JULIA

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## I. EXERCISES

The following exercises will help us practice various aspects of Julia, such as functions, loops, conditionals, arrays, and file processing. We should remember that we need to break down the exercises into smaller steps and test our code along the way. In this lab we'll be using:



*if u don't have julia in your machine please follow the guide in my repository "ayhem-b/Getting ready"*

### Exo 1: Fibonacci Sequence

Write a function that generates the Fibonacci sequence<sup>1</sup> up to a given number  $n$ .

$$F_0 = 0$$

$$F_1 = 1$$

$$F_n = F_{n-1} + F_{n-2} \quad \forall n \geq 2$$

```
function fib(n=10)
    F=zeros(n);
    F[1]=1;F[2]=1;
    for i=3:n
        F[i]=F[i-1]+F[i-2];
    end
    F
end
```

Display the Fibonacci sequence if  $n = 16$

```
[2]: 16-element Vector{Float64}:
      1.0
      1.0
      2.0
      3.0
      5.0
      8.0
     13.0
     21.0
     34.0
     55.0
     89.0
    144.0
    233.0
    377.0
    610.0
    987.0
```

### Exo 2: Prime Number

Write a function that determines if a given number  $n$  is prime<sup>2</sup>. The function should return true if the number is prime and false otherwise.

# WRITE YOUR CODE HERE



Give the list of prime numbers less than 100.

### Exo 3: Palindrome

Write a function that checks if a given string is a palindrome<sup>3</sup>. The function should return true if the string is a palindrome and false otherwise.

# WRITE YOUR CODE HERE



Check the sentence "Was it a car or a cat I saw?". Disregard spaces and punctuation marks.

### Exo 4: Matrix Operation

<sup>1</sup>The Fibonacci sequence starts with 0 and 1, and each subsequent number is the sum of the two preceding numbers.

<sup>2</sup>A prime number is a number greater than 1 that has no positive divisors other than 1 and itself.

<sup>3</sup>A palindrome is a word, phrase, number, or other sequence of characters that reads the same forward and backward.

Implement functions to perform basic matrix operations such as matrix addition, matrix multiplication, and determinant calculation.

```
# WRITE YOUR CODE HERE
```



Test your functions with the following matrices

```
A = [1 2; 3 4]
B = [5 6; 7 8]
```

### Exo 5: File Processing

Write a program that reads a text file and counts the occurrences of each word. Display the word count for each unique word in the file.

```
# WRITE YOUR CODE HERE
```



Redirect the output of 'man ls' command to a dummy file and display the word count for 'ls'

```
man ls > dummy
```