Recursion Lab

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Implement the following two recursive methods -

- A **recursive method** to sum the values of an integer array
  - Start with the provided sumOfArray method (ArraySumDriver.java)
  - **Make it a recursive method**
  - Optional | Make it a **generic method**
- Another **recursive method** to compute a Fibonacci number using the **dynamic programming version**.
  - **You MUST implement the dynamic programming version in order to earn credit**
  - The pseudocode has been provided, review the **Dynamic Programming** slides (Recursion.pptx)
  - Test your newly created Fibonacci method
- Add your name as a comment to the java file
- **Complete a small write-up highlighting your learning experience and including screenshots of test runs**

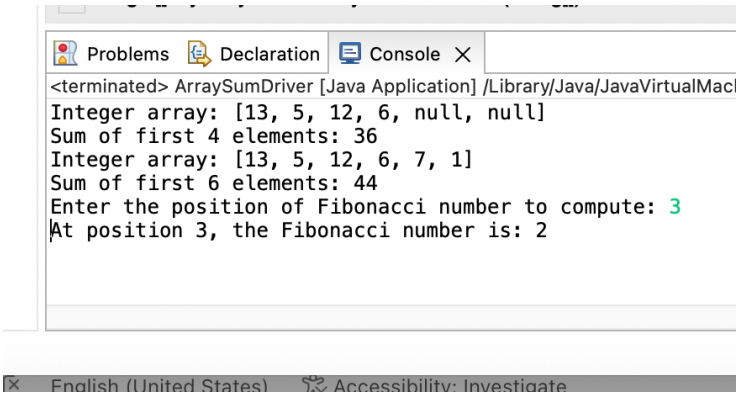
Learning Experience:

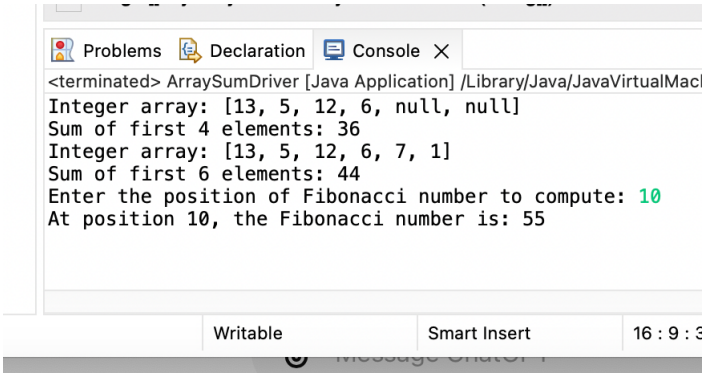
In this lab, I learned how to properly implement recursion and dynamic programming. First, I changed the sumOfArray method in ArraySumDriver.java to use recursion instead of loops. I wrote the method to continuously add up numbers in an array by calling itself until it finished adding everything.

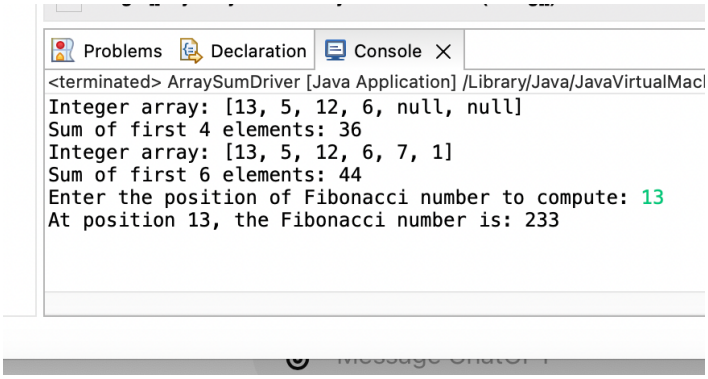
Then, I worked on calculating Fibonacci numbers using dynamic programming. This involved storing previous Fibonacci numbers in a list to make the program faster. This was done to avoid doing the same calculations over and over again. I also decided to let the user decide which Fibonacci number they wanted to compute for more engagement with my program (mostly to practice writing and implementing code).

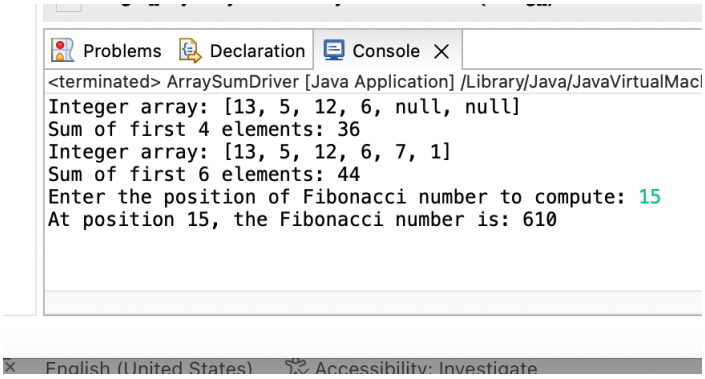
Throughout the assignment, I took a step-by-step approach, testing each part carefully to make sure everything worked correctly. This project helped me understand how recursion and dynamic programming can make programs more efficient and solve complex problems in Java.

Test Runs:




Problems
Declaration
Console
<terminated> ArraySumDriver [Java Application] /Library/Java/JavaVirtualMacl
Integer array: [13, 5, 12, 6, null, null]
Sum of first 4 elements: 36
Integer array: [13, 5, 12, 6, 7, 1]
Sum of first 6 elements: 44
Enter the position of Fibonacci number to compute: 10
At position 10, the Fibonacci number is: 55
Writable
Smart Insert
16 : 9 : 3


Problems
Declaration
Console
<terminated> ArraySumDriver [Java Application] /Library/Java/JavaVirtualMacl
Integer array: [13, 5, 12, 6, null, null]
Sum of first 4 elements: 36
Integer array: [13, 5, 12, 6, 7, 1]
Sum of first 6 elements: 44
Enter the position of Fibonacci number to compute: 13
At position 13, the Fibonacci number is: 233


Problems
Declaration
Console
<terminated> ArraySumDriver [Java Application] /Library/Java/JavaVirtualMacl
Integer array: [13, 5, 12, 6, null, null]
Sum of first 4 elements: 36
Integer array: [13, 5, 12, 6, 7, 1]
Sum of first 6 elements: 44
Enter the position of Fibonacci number to compute: 15
At position 15, the Fibonacci number is: 610
English (United States)
Accessibility: Investigate