Programming Assignment 2

Implement the following algorithms:

1. **Binary search**
   - Search all the numbers in the array.
   - Search a number that is not in the array.

2. **Fibonacci numbers**
   - Output several Fibonacci numbers.
   - The code must be implemented by divide-and-conquer method (recursive squaring).

3. **Maximum-subarray**
   - Use the array A = [-2, 11, -4, 13, -5, -2] to test your code.

4. **Strassen's algorithm for matrix multiplication**
   - Make sure that your code is available for any square matrix multiplication.
   - Your output should include the results computed by MATLAB's built-in matrix multiplication function (i.e. use A*B directly) and Strassen's algorithm (i.e. Strassen(A,B)).
   - For the square matrix whose size is not 2^k for some k, make sure that the most time-consuming part is calculated by Strassen's method.

5. **Randomize quick sort**
   - Input an unsorted array and output the sorted array.