CENG 2002 - Data Structures - Spring 2021
Homework #1

Due date : 24/03/2021 - 10:30

Assignment: Compare two implementations of Fibonacci function, Fib(n) empirically.

- Implement the recursive method
- Implement the iterative method (using loop(s))
- For each implementation
  - Run the implementation for n=1,2,3,4,5,6,7,8,9 at least 20 times for each n and record processing time
- Plot “n vs processing time” graph for both implementations on the same graph. You can use Excel, Python/Matplotlib or any other tool. Do not forget to put x,y labels, legends and units. Use different colors and line styles for each plot.

- Write a report (in Word, Pages, Latex or in any other tool) that includes:
  - Brief Explanation of each implementation with mathematical running time analysis and upper bounds.
  - How you measure the computation time empirically.
  - Codes for both implementations and the code to run for multiple n’s multiple times with a brief explanation
  - Graph you generated
  - Comment on the graph and the results you get from mathematical analysis.

Notes:

* Implement in C++.
* Convert your report to PDF.
* Do NOT forget to put your name, student id.
* Do not violate the academic integrity rules.

Submit:

- Submit single PDF file.

Late submission: No credits are given for late submissions.