ADV. COMPUTATIONAL THINKING & PROG.

COMP-SCI 5501 [Fall Semester 2025]

Assignment-2 (10 Points)

Submission Date: Oct 10th, 2025

Instructions:

- Submit the results of experiment as document in pdf. Form. (paste the link of your ***colab*** notebook at the end of the file)
- Late and copied assignment won't be graded and will get ZERO credit.

Question # 1: Perform the experiment to compare the efficiency of these four searching algorithms: (7 points)

- **Linear Search**
- **Sentinel Search**
- **Binary Search**
- **Ternary Search**

Tasks to do:

1. Read the given text file and store the string data in any of the python collection as linear data container.
2. Generate the keys randomly and search from the collection as an exact string.
3. For each algorithm execute this process twenty times. ***(Treatments)***
4. For Binary-search and Ternary-search you need to sort the data. This sorting cost will be inclusive as well.
5. Compare the number of comparisons made in each treatment.
6. Compare the execution time of each treatment as physical time using RTC (Real time Clock)
7. Show the comparative analysis for each treatment (for step 5—6) individually in form of:
   i. Tabulated data
   ii. Line Chart
8. Show the comparative analysis as average time for each algorithm in form of:
   i. Tabulated Data
   ii. Bar Charts
   iii. Exaplain your observations.

Question # 2: Perform the experiment to compare the performance of 2D list over Linear List by executing only Linear Search. (3 points)

1. Read the given text file and store the string data in Linear list straightforward but distributing the data in rows based on the first letter (lexicographical order).
2. Generate the keys randomly and search from the Linear and 2D list, execute this process ten times. ***(Treatments)***
3. Compare the number of comparisons made in each treatment and give the results in tabulated form and also calculate the average.
4. Exaplain your observations.

Instructor:

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