SUMMARY

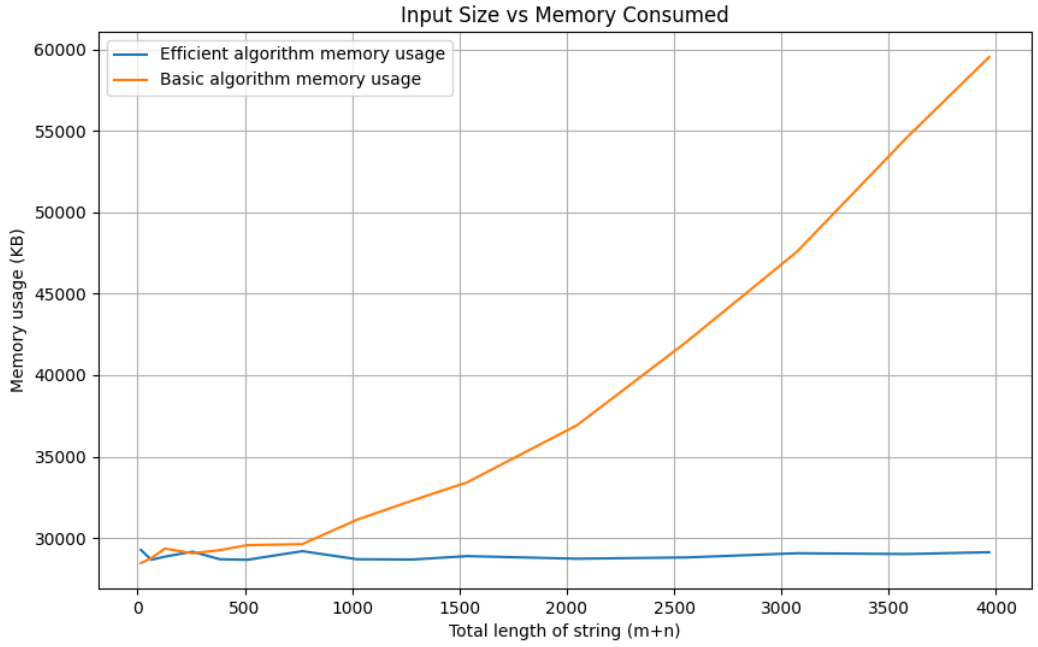
USC ID/s: 6494261668, 6104797766, 1198271852

Datapoints:

M+N	Time in MS (Basic)	Time in MS (Efficient)	Memory in KB (Basic)	Memory in KB (Efficient)
16	0.17309188842773400	0.3008842468261720	28464.0	29280.0
64	1.068115234375	2.5069713592529300	28768.0	28672.0
128	3.948688507080080	9.573936462402340	29360.0	28864.0
256	14.920949935913100	36.438941955566400	29072.0	29168.0
384	34.01303291320800	83.25982093811040	29264.0	28704.0
512	60.67609786987310	146.24381065368700	29568.0	28672.0
768	138.51022720336900	334.6700668334960	29632.0	29200.0
1024	245.23305892944300	596.7879295349120	31136.0	28704.0
1280	383.404016494751	916.2271022796630	32304.0	28688.0
1536	545.0069904327390	1312.6747608184800	33424.0	28896.0
2048	983.673095703125	2332.616090774540	36928.0	28736.0
2560	1547.6360321044900	3660.6719493866000	42064.0	28816.0
3072	2173.445701599120	5188.416004180910	47568.0	29072.0
3584	2962.0680809021000	7138.374328613280	54576.0	29024.0
3968	3699.720859527590	8773.253917694090	59520.0	29136.0

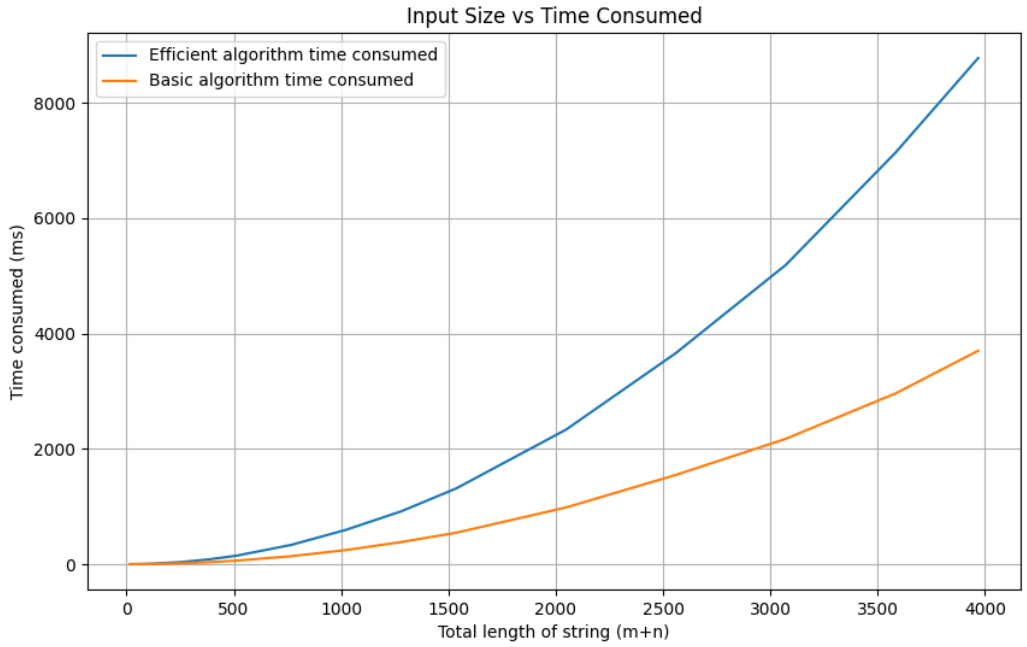
Insights:

- Graph1 – Memory vs Problem Size (M+N)



- Nature of the Graph (Logarithmic/ Linear/ Polynomial/ Exponential)
  - *Basic:* Polynomial
  - *Efficient:* Linear
  - *Explanation:* Basic algorithm has space complexity of O(mn) whereas efficient algorithm has space complexity of O(min(m,n)) where m and n are the lengths of input string. Thus, memory consumption by the efficient algorithm is significantly less compared to the basic algorithm.

- Graph2 – Time vs Problem Size (M+N)



  - Nature of the Graph (Logarithmic/ Linear/ Polynomial/ Exponential)
    - *Basic:* Polynomial
    - *Efficient:* Polynomial
    - *Explanation:* Both efficient and basic algorithm take O(mn) time. However, the number of computations done in efficient algorithm are twice than that of the basic one. In addition to that we also need to take into account the time required to manage the recursive calls made in our Divide and Conquer approach.

Contribution:

- 6494261668: Equal Contribution
- 6104797766: Equal Contribution
- 1198271852: Equal Contribution