Final Project 2023S SSW567-WS

SSW 567-WS
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Part3-PerfTesting
Team: C

Performance Engineers
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Performance Testing:

1. GitHub Repository: https://github.com/ArunRao1997/SSW-567-Final-Project

2. Spreadsheet:
https://docs.google.com/spreadsheets/d/1N0yBNzZ9DUsn9lkimBLh68l4i6ReARdEUsQa7T1u2-s/edit?usp=sharing

Performance Testing:

Performance testing evaluates the speed, scalability, and stability of a Python application or system under various workloads and conditions. It identifies potential bottlenecks or issues that could impact performance. This testing is typically conducted during the development and testing phases to ensure the application or system can handle the anticipated workload and meet user performance requirements.

Report and Results:

An essential aspect of software testing is assessing code performance to determine its efficiency. Inefficient code might require refactoring. In this project, we simulated performance testing by measuring the time taken to parse 'n' lines, ranging from 100 to 10,000. Our code demonstrated a complexity of O(n).

We recorded two instances of our performance score. After measuring the initial performance, we refactored the code to minimize the number of mutants generated during mutation testing.

```
PS C:\Users\Arun Rao Nayineni\SSW-567-Final-Project\Part-2> python performanceTesting.py
Currently running:  records_decoded.json
Processed  100  records in  0.0025 seconds.
Processed  1000  records in  0.025 seconds.
Processed  2000  records in  0.0473 seconds.
Processed  1000  records in  0.0273 seconds.
Processed  2000  records in  0.0416 seconds.
Processed  3000  records in  0.062 seconds.
Processed  4000  records in  0.0878 seconds.
Processed  5000  records in  0.1185 seconds.
Processed  6000  records in  0.1181 seconds.
Processed  7000  records in  0.1322 seconds.
Processed  8000  records in  0.1673 seconds.
Processed  9000  records in  0.1824 seconds.
Processed  10000  records in  0.1909 seconds.
Done processing -  records_encoded
PS C:\Users\Arun Rao Nayineni\SSW-567-Final-Project\Part-2>
```

Figure 1: Screen Dump of Performance Test Performed Locally

To verify that the performance was not affected, we measured the performance again. We observed only a small increase in the time taken to complete each test, and the code maintained a complexity of O(n).

Figures:

Lines read (n)	Encode Performance (s)	Decode Performance (s)	Encode Performance Modified (s)	Decode Performance Modified (s)
100	0.00368379200	0.00323529200	0.003850708	0.003387208
1,000	0.03592770800	0.03185566700	0.037632041	0.033392291
2,000	0.07190883400	0.06399629200	0.074555916	0.065088083
3,000	0.10682275000	0.09675112500	0.112522625	0.098394542
4,000	0.14279737500	0.12927483300	0.14915825	0.130758042
5,000	0.17801850000	0.15994108400	0.187406583	0.16328225
6,000	0.21418037500	0.19589658300	0.224193333	0.19820675
7,000	0.24956683400	0.22731129100	0.265123459	0.226738083
8,000	0.28483079100	0.26147708400	0.298536125	0.2604685
9,000	0.32003737500	0.28104670800	0.33581875	0.284740125
10,000	0.35544920900	0.31050629100	0.373566042	0.316379333

Figure 2

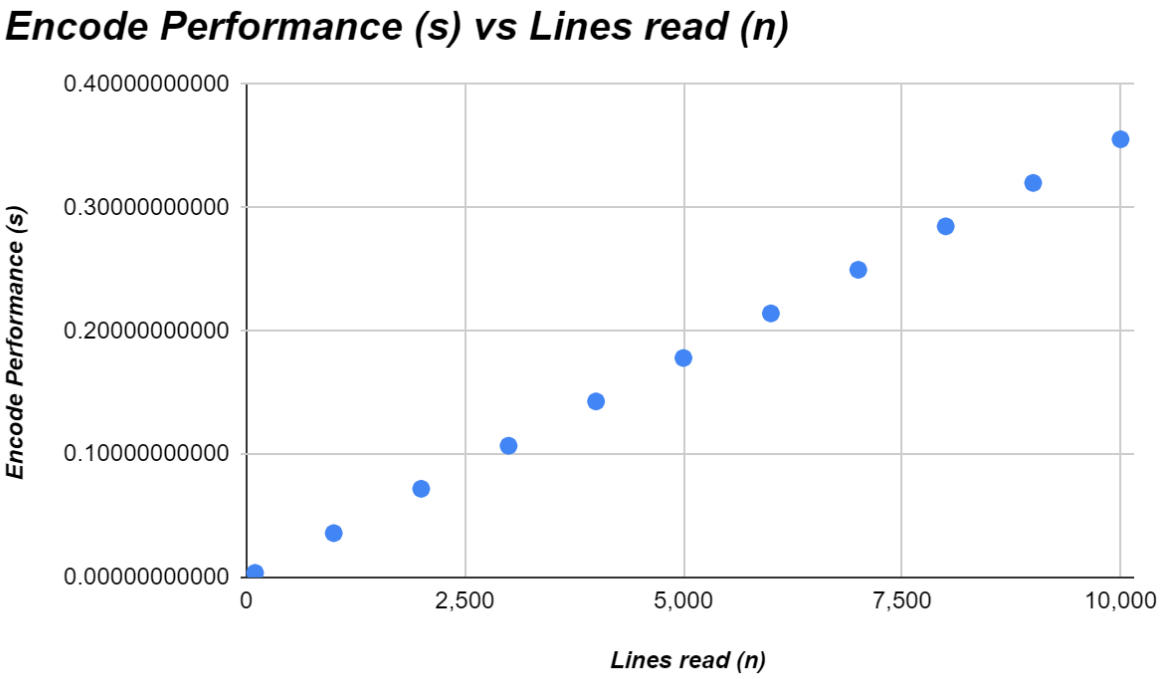

Figure 3

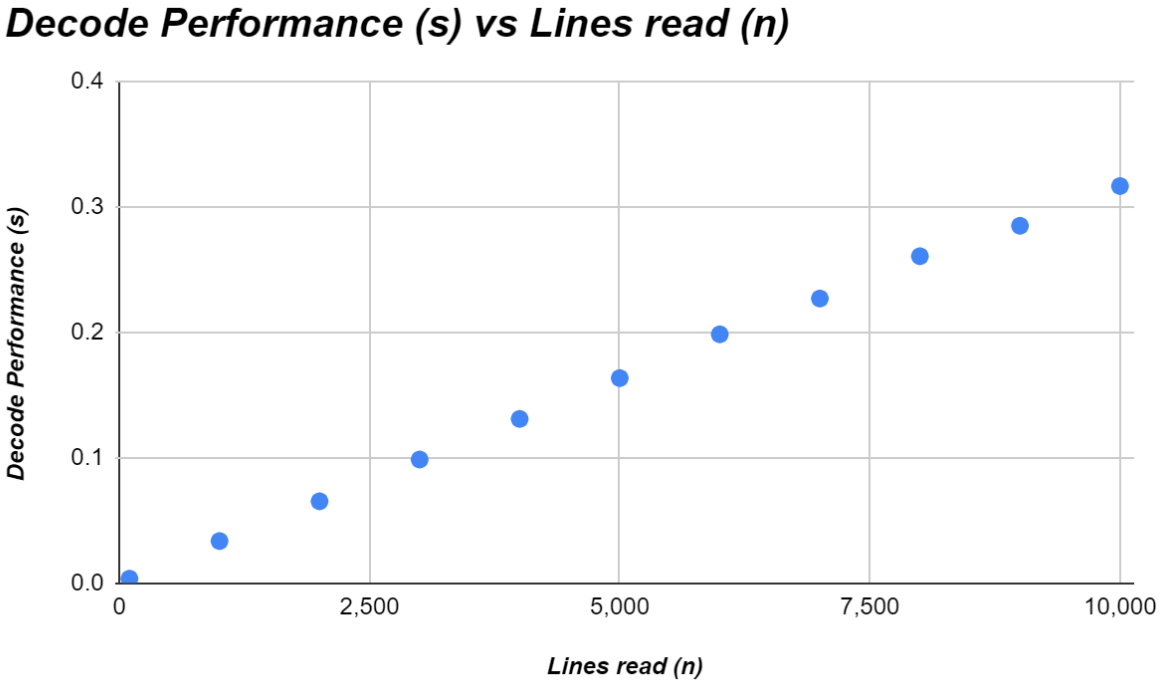

Figure 4

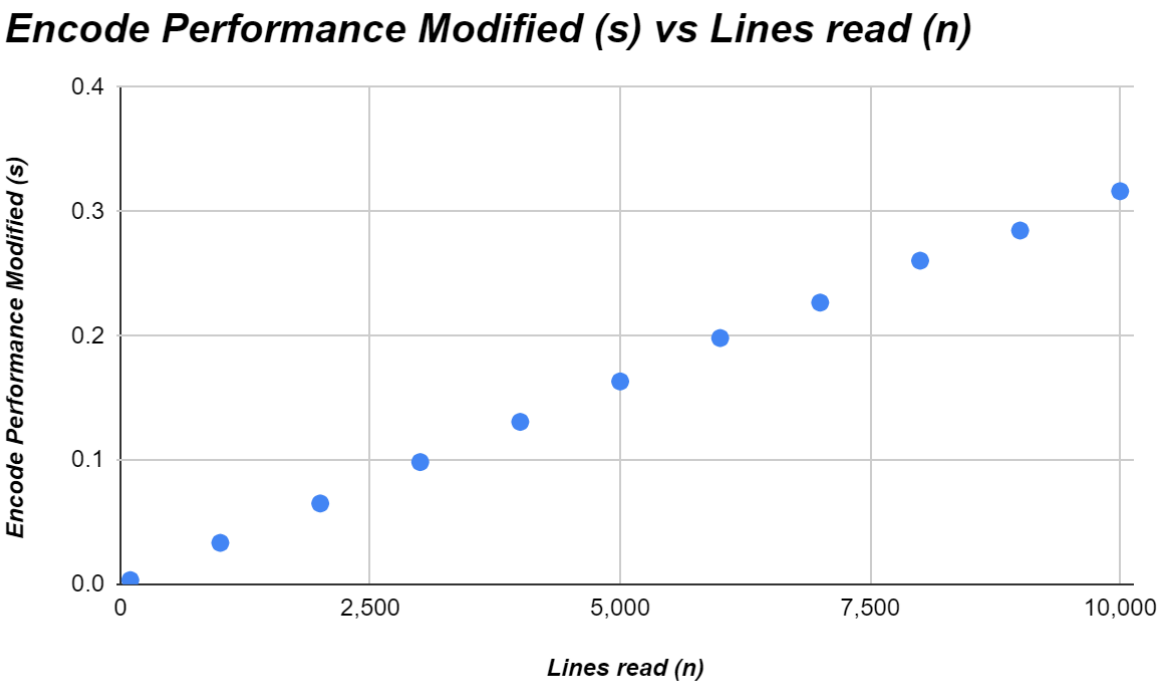

Figure 5

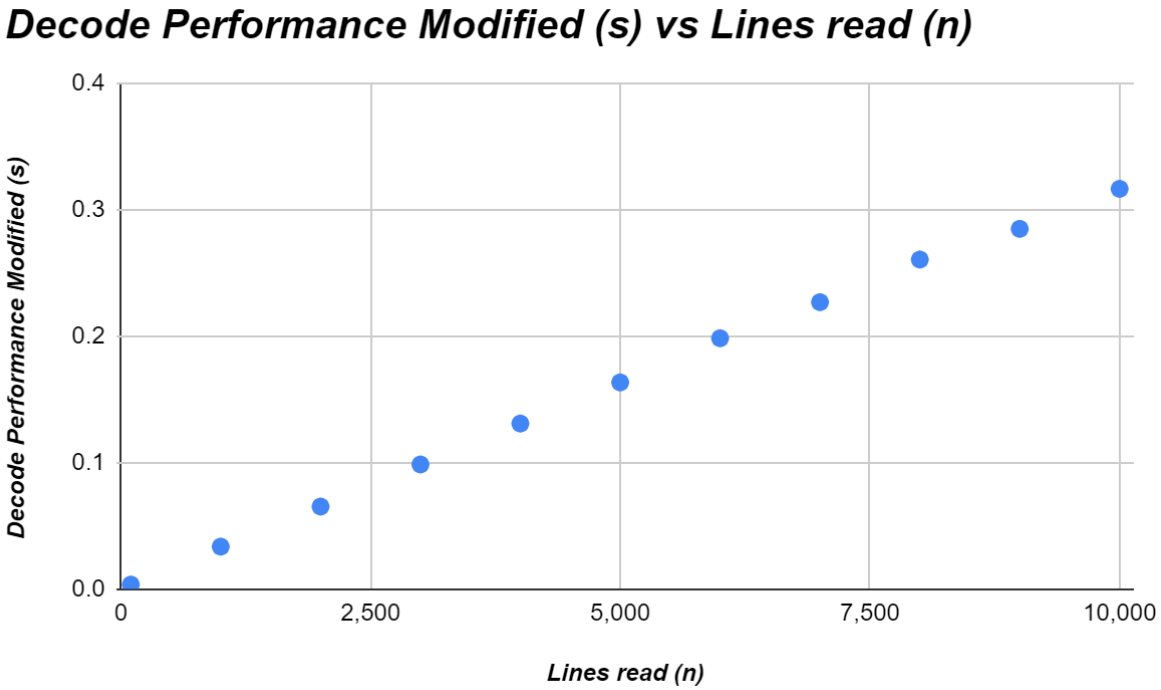

Figure 6