**Runtimes for Data Structures**

**EVALUATE RUN TIMES:**

Vectors:

|  |  |  |  |
| --- | --- | --- | --- |
| Operations | Cost Per Line | Number of times executed | Big O value |
| Opening and reading a file | 1 | O(n) | O(n) |
| Parsing Each Line and Creating Course Objects | 1 | O(n) | O(n) |

Hash Table:

|  |  |  |  |
| --- | --- | --- | --- |
| Operations | Cost Per Line | Number of times executed | Big O value |
| Opening and reading a file | 1 | O(n) | O(n) |
| Parsing Each Line and Creating Course Objects | O(1) | O(n) | O(n) |

TREE:

|  |  |  |  |
| --- | --- | --- | --- |
| Operations | Cost Per Line | Number of times executed | Big O value |
| Opening and reading a file | 1 | O(n) | O(n) |
| Parsing Each Line and Creating Course Objects | O(log n) | O(n) | O(n log n) |