5133 COMP – Data Structures and Algorithms

CW 1 – CVE Database System

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1) Data Sets =

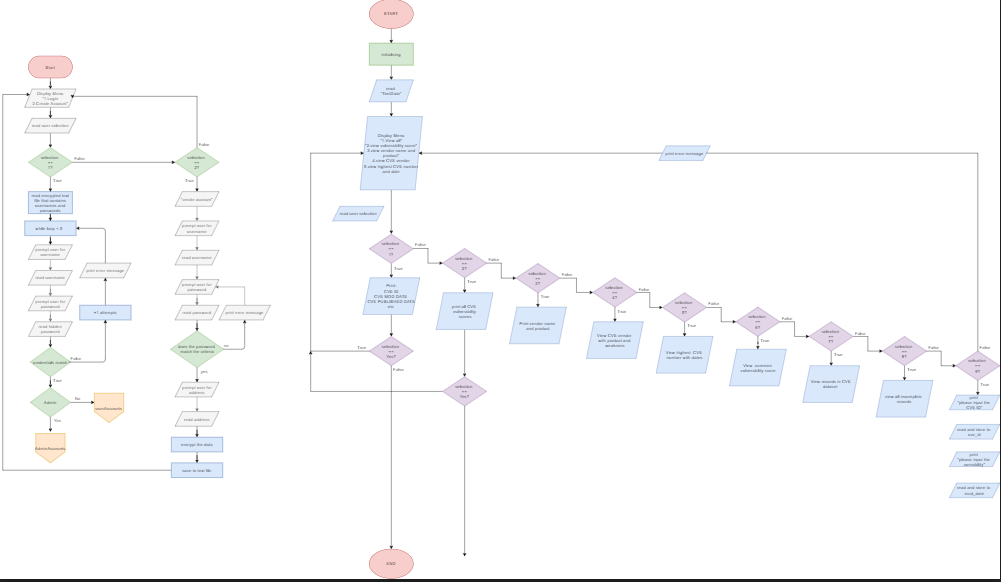
Before creating anything, we need to think about the types of datasets and figure out plans and the look of the code before we execute as a group. The very start we will be looking at the data sets that have been given to us from the SAMPLEDATASET-CVE.csv file and figuring what needs splitting and worked with for the code. The table below is like the one in the coursework brief, but we feel can be used and be of use showing in our design of the split of sets and how we look and will execute them.

|  |  |
| --- | --- |
| Attributes | Purpose/Description |
| cve\_id | CVE Identifier |
| mod\_date | Entry showing the last modified date |
| pub\_date | Entry showing the last published date |
| cvss | Measuring the severity of one or more vulnerabilities |
| cwe\_code | Identifying the weaknesses and the type of weaknesses |
| cwe\_name | The name linked and associated with the cwe\_code |
| summary | Summary of the text vulnerability |
| access\_authentication | {NONE, SINGLE, MULTIPLE} |
| access\_complexity | {LOW, MEDIUM, HIGH} |
| access\_vector | {LOCAL, NETWORK, ADJACENT NETWORK} |
| impact\_availability | {NONE, PARTIAL, COMPLETE} |
| impact\_confidentiality | {NONE, PARTIAL, COMPLETE} |
| impact\_integrity | {NONE, PARTIAL, COMPLETE} |

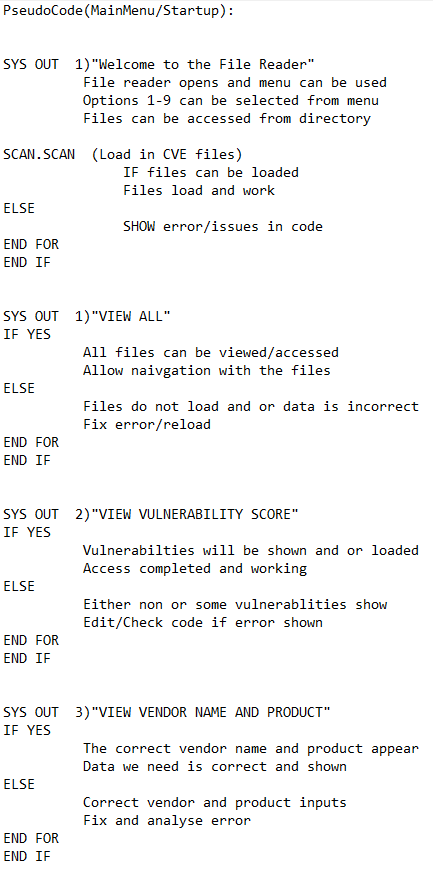
**Analysis of Problem –**

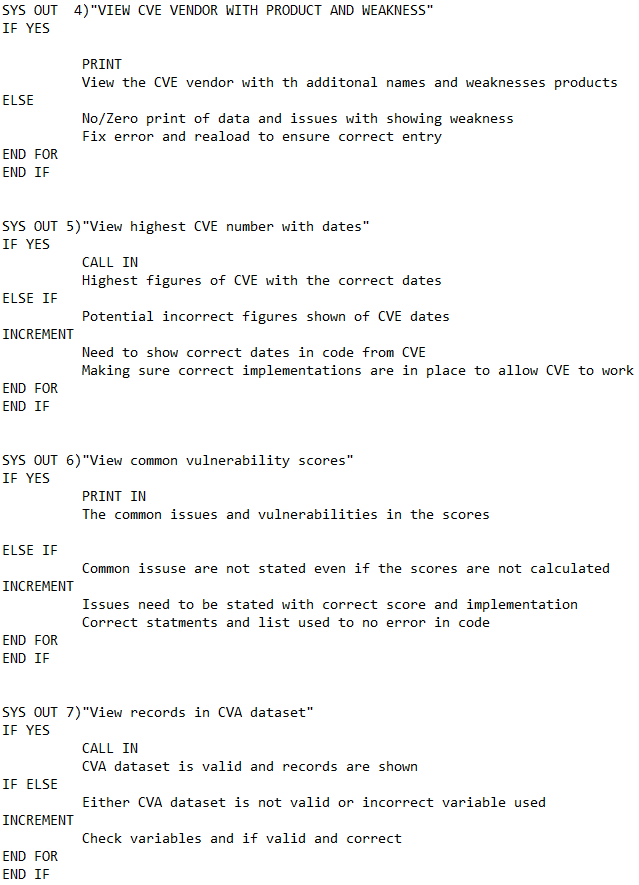
**UML Diagram –**

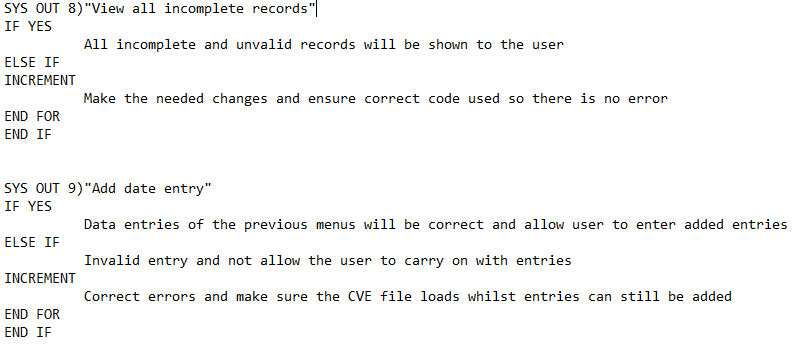
**Flowchart -**



**Pseudocode –**

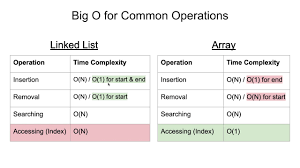






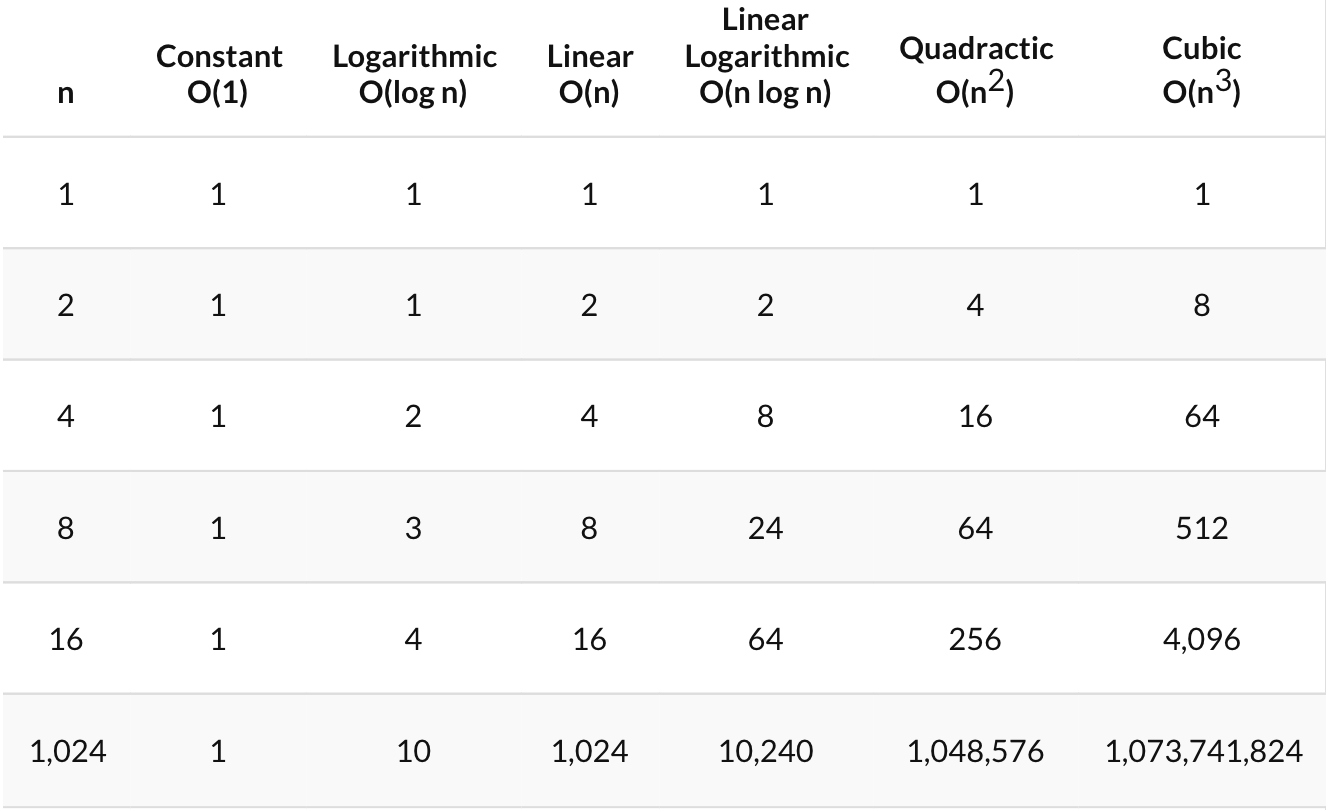
**Big O Notations Explanation –**

Big O notation is a mathematical term which uses functions and arguments towards a particular value. It is a measure of algorithms and its speed and is used in Array Lists and Linked Lists in coding. Below is an image that shows an example of big O notations.



[**https://www.youtube.com/watch?v=z4pzb-hX2EI&ab\_channel=KodingKevin**](https://www.youtube.com/watch?v=z4pzb-hX2EI&ab_channel=KodingKevin)

The image above shows the differences and the common operations between Linked and Array lists. They are used to classify and work with algorithms; they do this by basing it on the running time and or the space required when it works with the input time. It uses complex mathematics and complex function as seen in the image above to allow the insert, search and removal of functions.

<https://dzone.com/articles/learning-big-o-notation-with-on-complexity>

The image above shows the complexities and the common ones in

**Security Analysis –**

**Testing Plan –**

|  |  |  |  |
| --- | --- | --- | --- |
| Test: | Expected Result of Test: | Potential Issues when Testing: | How to overcome the issue when testing: |
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