***Documento de Análisis***

En este documento estara conformado por el análisis de complejidad de cada uno de los requerimientos del Reto 1 y a su vez, las pruebas de tiempos de ejecución de los mismos.

1. **Complejidad de los Algoritmos**

**Req 1.**

**Graphical user interface, text

Description automatically generated**

**Complejidad:** O()

**Req 2.**

**Graphical user interface, text, application

Description automatically generated**

**Complejidad:** O()

**Req 3.**

**Text

Description automatically generated**

**Complejidad:** O()

**Req 4.**

**Text

Description automatically generated with medium confidence**

**Complejidad:** O()

**Req 5.**

Graphical user interface, text, application

Description automatically generated

Text, timeline

Description automatically generated

**Complejidad:** O()

**Req 6.**

1. **Tiempos de Ejecución**

**Req 1.**

|  |  |  |
| --- | --- | --- |
| % de Muestra  (ARRAYLIST) | Tiempo(ms) | Sort\_List(ms)  (Merge Sort) |
| 0,50% | 0.0 | 31.25 |
| 5% | 0.0 | 93.75 |
| 10% | 0.0 | 140.62 |
| 20% | 15.62 | 171.87 |
| 30% | 15.62 | 218.75 |
| 50% | 15.62 | 312.5 |
| 80% | 15.62 | 325.0 |
| 100% | 31.25 | 343.75 |

**Req 2.**

|  |  |  |
| --- | --- | --- |
| % de Muestra  (ARRAYLIST) | Tiempo(ms) | Sort\_List(ms)  (Merge Sort) |
| 0,50% | 0.0 | 15.62 |
| 5% | 0.0 | 171.87 |
| 10% | 46.87 | 328.12 |
| 20% | 62.5 | 718.75 |
| 30% | 62.5 | 1171.87 |
| 50% | 156.25 | 1953.12 |
| 80% | 218.75 | 3203.12 |
| 100% | 298.87 | 3859.37 |

**Req 3.**

|  |  |
| --- | --- |
| % de Muestra  (ARRAYLIST) | Tiempo(ms) |
| 0,50% | 0.0 |
| 5% | 31.25 |
| 10% | 31.25 |
| 20% | 46.87 |
| 30% | 78.12 |
| 50% | 93.75 |
| 80% | 171.87 |
| 100% | 203.12 |

**Req 4.**

|  |  |
| --- | --- |
| % de Muestra  (ARRAYLIST) | Tiempo(ms) |
| 0,50% |  |
| 5% |  |
| 10% |  |
| 20% |  |
| 30% |  |
| 50% |  |
| 80% |  |
| 100% |  |

**Req 5.**

|  |  |  |
| --- | --- | --- |
| % de Muestra  (ARRAYLIST) | Tiempo(ms) | Sort\_List(ms)  (Merge Sort) |
| 0,50% | 31.25 | 15.62 |
| 5% | 93.75 | 156.25 |
| 10% | 187.5 | 375.0 |
| 20% | 390.62 | 671.87 |
| 30% | 593.75 | 1140.62 |
| 50% | 1062.5 | 1906.25 |
| 80% | 1781.25 | 3046.87 |
| 100% | 2234.37 | 3656.25 |

**Req 6.**

|  |  |  |
| --- | --- | --- |
| % de Muestra  (ARRAYLIST) | Tiempo(ms) | SortList(ms)  (Merge Sort) |
| 0,50% |  |  |
| 5% |  |  |
| 10% |  |  |
| 20% |  |  |
| 30% |  |  |
| 50% |  |  |
| 80% |  |  |
| 100% |  |  |

A continuacion se presenta el Anexo de las graficas de cada uno de los requerimientos, teniendo en cuenta algoritmos de organizacion como Merge Sort y Shell Sort.

Anexo de Graficas:

Req 1.

Req 2.

Req 3.

Req 4

Req 5.

Req 6.