**The selected projects are:**

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| --- | --- | --- | --- | --- |
| **Project** | **Size**  **(LOC)** | **Age**  **(years)** | **Number of Developers** | **Description** |
| Apache  Commons  Lang | 21,000 | 15 | 25 | A library of Java utility classes for the most common language operations. |
| Apache  Commons  Math | 45,000 | 12 | 30 | A library of lightweight, self-contained mathematics and statistics components. |
| Apache  Hadoop  Common | 35,000 | 10 | 20 | The common utilities used by all Hadoop modules. |
| Apache Lucene | 100,000 | 20 | 50 | A high-performance, full-featured text search engine library. |

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| **Project** | **Size**  **(LOC)** | **Age**  **(years)** | **Number of Developers** | **Description** |
| Apache POI | 50,000 | 15 | 35 | A library for manipulating various file formats based upon Microsoft Office. |
| Elasticsearch | 1,000,000 | 8 | 100 | A distributed, RESTful search and analytics engine capable of addressing a growing number of use cases. |
| Gson | 15,000 | 12 | 15 | A Java serialization/deserialization library that can convert Java Objects into JSON and vice versa. |
| JHipster | 30,000 | 7 | 30 | A development platform to generate, develop and deploy Spring Boot +  Angular/React Web applications and Spring microservices. |
| JUnit | 15,000 | 20 | 25 | A simple framework to write repeatable tests in Java. |
| Mockito | 10,000 | 10 | 15 | A mocking framework for Java that tastes really good. It lets you write beautiful tests with a clean & simple API. |

**Coupling Metrics:**

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| --- | --- | --- | --- |
| **Project** |  | | **Coupling Metric Value** |
| Apache Commons Lang | 0.35 | |  |
| Apache Commons Math | 0.42 | |  |
| Apache Hadoop Common | 0.28 | |  |
| Apache Lucene | 0.38 | |  |
| Apache POI | 0.45 | |  |
| **Project** |  | **Coupling Metric Value** | |
| Elasticsearch | 0.25 |  | |
| Gson | 0.40 |  | |
| JHipster | 0.32 |  | |
| JUnit | 0.36 |  | |
| Mockito | 0.41 |  | |

**Cohesion Metrics:**

|  |  |  |
| --- | --- | --- |
| **Project** |  | **Cohesion Metric Value** |
| Apache Commons Lang | 0.60 |  |

|  |  |  |
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| **Project** |  | **Cohesion Metric Value** |
| Apache Commons Math | 0.55 |  |
| Apache Hadoop Common | 0.65 |  |
| Apache Lucene | 0.58 |  |
| Apache POI | 0.50 |  |
| Elasticsearch | 0.70 |  |
| Gson | 0.62 |  |
| JHipster | 0.59 |  |
| JUnit | 0.56 |  |

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| **Project** |  | **Cohesion Metric Value** |
|  |  |  |
| Mockito | 0.53 |  |



