**PROJECT NAME: NEMO**

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| TASK # | PROJECT TASKS WHICH REQUIRE SOFTWARE TOOL SUPPORT |
| 1 | TESTING |
| 2 | DATABASE MANAGEMENT SYSTEM |
| 3 | IMAGE RECOGNITION SYSTEM |

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| SOFTWARE TOOLS FOR TASK 1: TESTING |
| Tool Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | KATALON | POSTMAN | SOAPUI | SELENIUM | | Cost | free | 29$ | 985$ | free | | Training Days | 7 | 10 | 20 | 15 | | Functionality | 80 | 100 | 50 | 70 |   Normalized Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | KATALON | POSTMAN | SOAPUI | SELENIUM | | Cost | free | 2.9 | 100 | free | | Training Days | 35 | 50 | 100 | 75 | | Functionality | 80 | 100 | 50 | 70 |   Normalized Tool Graph |
| Which tool has been selected? Why?  Selenium is the best choice for the Testing because of these reasons: It is an open-source test automation tool used for automating web-based applications. It works compatibly with different browsers (Chrome, Firefox, IE, etc.). It is highly flexible and has a wide user base. It offers support for multiple programming languages for automation scripts.  Here are some reasons why Selenium might be preferred over tools like Katalon, Postman, and SOAPUI:   1. Wide Range of Applications: Selenium has a broad range of applications for web-based automation testing. It provides a highly flexible framework for testing web applications. On the other hand, while Katalon is often preferred for GUI-based test scenarios, Postman and SOAPUI are more focused on API testing. 2. Language Independence: Selenium can be used with various programming languages. This allows developers to write test scenarios using their preferred language. In contrast, Katalon relies on its proprietary scripting language, Groovy, while Postman and SOAPUI are primarily JavaScript-based for RESTful API testing. 3. Open Source and Extensive Community Support: Selenium is an open-source project with a large user community. This means developers can get support while troubleshooting or learning new techniques. While other tools also provide community support, Selenium's community support is more widespread and established. 4. Flexibility and Customization: Selenium provides various tools for customizing test scenarios flexibly. The WebDriver API supports different browsers and makes test scenarios runnable in a wide range of environments. This allows you to develop various test automations suitable for different scenarios. 5. Continuous Integration and CI/CD Compatibility: Selenium can be integrated into continuous integration (CI) and continuous deployment (CD) processes. It is compatible with popular CI/CD tools and can easily integrate automated test processes as part of these processes.   In conclusion, the advantages of Selenium, such as its wide range of applications, language independence, open source and extensive community support, flexibility and customization options, and CI/CD compatibility, may make it preferred over other test automation tools. However, other tools may also be suitable depending on the project's needs and ecosystem.  Formun Üstü |

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| SOFTWARE TOOLS FOR TASK 2: DATABASE MANAGEMENT SYSTEM |
| Tool Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | Mysql | Postgre | Mongodb | Influx | | Cost | Free | Free | 57$ | Free | | Training Days | 15 | 7 | 15 | 13 | | Functionality | 80 | 100 | 70 | 40 |   Normalized Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | Mysql | Postgre | Mongodb | Influx | | Cost | Free | Free | **5.7** | Free | | Training Days | 100 | 46,6 | **100** | 86,6 | | Functionality | 80 | 100 | **70** | 40 |   Normalized Tool Graph |
| Which tool has been selected? Why?  Postgre is the best choice for the Database Management System part because of these reasons: It is an excellent relational database management system (RDBMS) for storing and processing complex relational data. It has high performance, reliability, and extensive community support. It offers advanced features and compliance with standards, also supporting NoSQL-like features such as JSON data types.  The choice of a database management system (DBMS) can vary depending on project requirements, performance expectations, and usage scenarios. However, there are several important points as to why PostgreSQL might be preferred over other candidates:   1. Data integrity and ACID compliance: PostgreSQL is known for its full compliance with ACID (Atomicity, Consistency, Isolation, Durability) properties. This means it ensures data integrity, securely executes transactions, and maintains the state of the database. These features can be a preference, particularly in areas requiring high reliability such as financial applications or critical systems. 2. Wide community support and documentation: PostgreSQL is supported by a large community, and there is plenty of documentation, guides, and community forums available online. This helps developers solve problems and learn best practices effectively. 3. Broad feature set: PostgreSQL supports advanced data types, complex queries, arrays, JSON support, full-text search capabilities, and geographical data processing, among various other features. This enables suitability for diverse usage scenarios and provides developers with a wide range of tools. 4. Performance and scalability: PostgreSQL offers many configuration options to enhance performance. Additionally, it includes features for scalability in high-traffic environments. When properly configured, PostgreSQL can handle large volumes of data processing requirements. 5. Open-source and free to use: PostgreSQL is developed as an open-source project and is available for free. This can be attractive from a cost perspective and can save on licensing costs for businesses.   Of course, other databases like MongoDB and InfluxDB may be suitable for specific usage scenarios. For instance, MongoDB might be preferred as a NoSQL database to meet certain types of data modeling requirements, while InfluxDB is specifically designed for optimizing time-series data. However, for a general-purpose relational database, PostgreSQL offers a robust, reliable, and feature-rich option.  Formun Üstü |

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| SOFTWARE TOOLS FOR TASK 3: IMAGE RECOGNITION SYSTEM |
| Tool Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | AWS REKOGNITION | Google Cloud Vision | PyTorch | OpenCV | | Cost | 4.800$ | 3000$ | 90$ | 90$ | | Training Days | 20 | 50 | 11 | 27 | | Functionality | 90 | 60 | 80 | 40 |   Normalized Cost/Training/Functionality Data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Tool | AWS REKOGNITION | Google Cloud Vision | PyTorch | OpenCV | | Cost | 100 | 62.5 | **1.87** | 1.87 | | Training Days | 40 | 100 | **22** | 54 | | Functionality | 100 | 66,6 | **88,8** | 44,4 |   Normalized Tool Graph |
| Which tool has been selected? Why?  PyTorch is the best choice for the Rekogrition part because of these reasons: AWS Rekognition, Google Cloud Vision, and OpenCV typically offer ready-to-use solutions that are easier and faster to use. However, there are some advantages to choosing frameworks like PyTorch:   1. Flexibility and Customization: PyTorch allows you to customize every aspect of your deep learning model. You can start with pre-trained models and then adjust or train your models to fit your specific needs. This enables you to create custom solutions that better fit a particular problem or dataset. 2. Flexibility and Control: PyTorch provides a more flexible API compared to other deep learning frameworks like TensorFlow. This gives you more control over building your model and makes it easier to express complex model architectures. 3. Research and Development Opportunities: PyTorch is popular for research and prototyping. Many research groups and academic institutions prefer PyTorch, allowing for the rapid adoption of new technologies and the quick implementation of new algorithms and methods. 4. Community Support and Resources: PyTorch has a large user and developer community. This community provides documentation, educational resources, sample projects, and troubleshooting assistance. This makes learning PyTorch easier for beginners and facilitates getting support when encountering more complex issues. |