JAVA PROGRAMMING PROJECT

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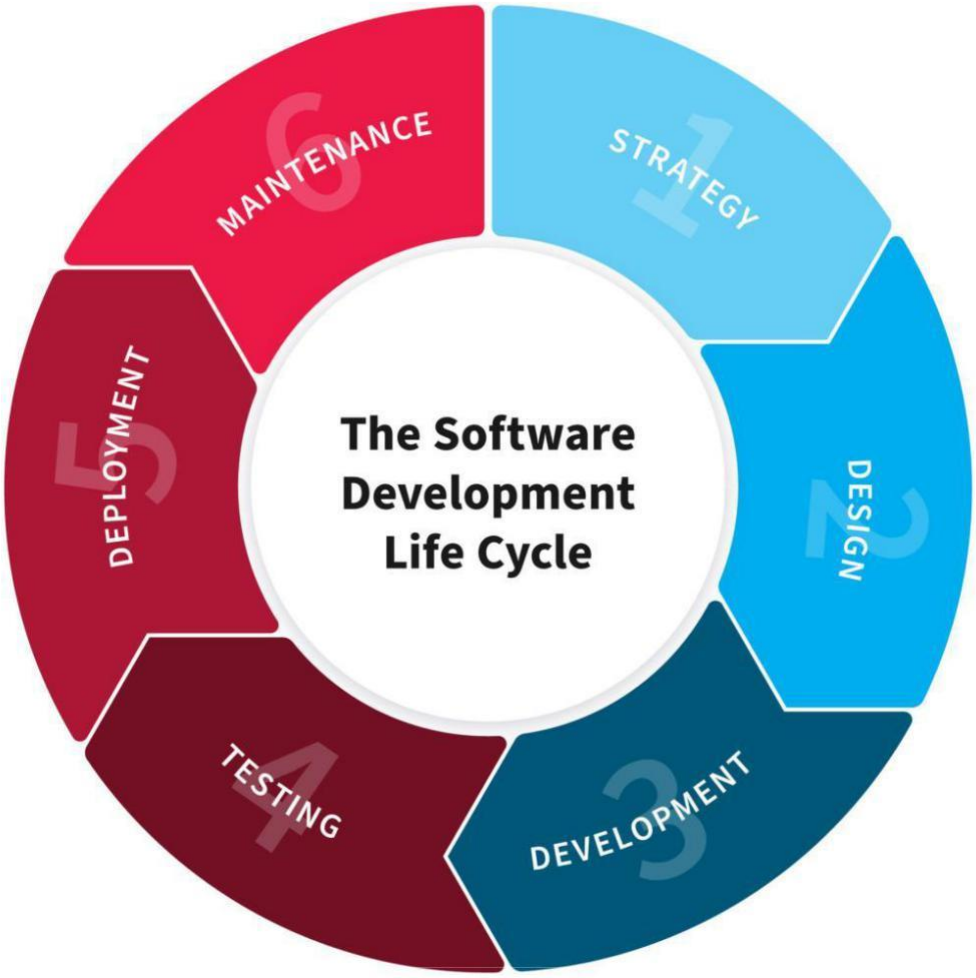
PROJECT NAME: Student Management System



1. Planning

Student Management System *is a software application that aims to automate the management of student records and information.*

The system will provide a centralized platform for administrators to access and manage student data, such as personal information, enrollment records, grades, and mark sheets.

The goals of the Student Management System project are to:

- *Automate the management of student records and information.*
- *Provide a centralized platform for administrators to access and manage student data.*
- *Reduce manual data entry errors and increase data accuracy.*
- *Improve transparency and accessibility of student records.*

The objectives of the Student Management System project are to:

- *Develop a software application that allows for easy input, storage, and retrieval of student information.*
- *Provide a user-friendly interface for administrators to access and manage student data.*
- *Ensure data security and confidentiality for student records.*

The problems that the Student Management System project aims to solve include:

- *Inefficiency in the current manual system for managing student records.*
- *Lack of transparency and accessibility in student records.*
- *Difficulty in monitoring and analyzing student data for academic improvement.*

- *Data entry errors and inaccuracies in student records.*

The Student Management System project aims to address these problems by developing a solution that achieves the project goals and objectives defned above.

2. Design

Technical Requirements:

- *The system was developed as a java application using Apache netBeans IDE.*
- *The system use MySQL Workbench as the database management system to store and manage student data.*

Functional Requirements:

- *The system will provide a centralized platform for administrators to access and manage student data.*
- *The system will allow for the input, storage, and retrieval of student information, including personal information, enrollment records, and grades.*
- *The system will include a reporting feature that allows for monitoring student data for academic improvement.*
- *The system will include security measures to ensure the confdentiality and security of student data for example a login feature to authenticate the admins.*

User Interaction:

- *The administrator will have access to all student records and will be able to input and manage student data like personal and grades information, generate reports, and export student information as pdf fles.*
- *Users will interact with the system through an interface that is easy to navigate and user-friendly.*
- *The system will have validation and error handling in place to ensure data integrity and to guide the user through the process.*

3. Development

Development steps for the Student Management System project in Java using Apache NetBeans IDE and MySQL database:

Database design and setup:

We used MySQL as the database management system \DBMS\.

- *Creating database schemas and data models that align with the system's functional requirements \admin, student, courses, and score schemas\.*
- *Connecting to MySQL using "mysql-connector-java-8.0.26" driver.*
- *Creating the admin, student, courses, and score tables and fields in the database using SQL scripts.*
- *Defining relationships between tables.*

Project development:

- *Open Apache NetBeans IDE and create a new Java project for the student management system.*
- *Develop the interface of the system using Java Swing.*
- *Develop the system and implement the necessary methods to handle the insertion of information, data manipulation and validation.*
- *Handling the communication between the application and the database.*
- *Implementing a login system to ensure the confidentiality and security of student data.*
- *Ensure data is being stored, retrieved, and manipulated correctly.*

4. Testing

Testing Plan for the Student Management System project:

- *Testing if the components of the system, such as the database and the user interface works correctly.*
- *Develop integration tests for the entire system to ensure that all the components are working together correctly.*
- *Testing the system as a whole to ensure that it is meeting the functional and technical requirements.*
- *Fix any defects or bugs that are identified during testing.*
- *Collect feedback from users and use it to make improvements to the system.*

5. Deployment

The whole project was uploaded to github for easy access and maintenance.

Installation, testing, and performance monitoring of the Student

Management System on the local computer can be conducted as follows:

Installation:

- *Download and install the necessary software, such as the Apache NetBeans IDE, MySQL and the Java Development Kit \JDK\ if it is not yet installed on the local computer.*
- *Clone or download the project to your local machine from github.*
- *Download and configure the necessary settings for the system, such as setting up MySQL Workbench and MySQL-java-connector driver.*
- *Open the project in the Apache NetBeans IDE and build the project to ensure that all dependencies are properly installed.*
- *Run the system on the local computer to ensure that it is working as expected.*

6. Maintenance

- *Continuously monitor the system for any issues or bugs.*

- *Regularly conduct tests on the system to ensure that it does not break and is still working as expected.*
- *Provide user support and troubleshoot any issues that arise.*
- *Collect feedback from users and use it to make improvements to the system.*
- *Continuously fix any defects or bugs that are identified.*

In conclusion

The Student Management System is an efficient solution for managing student records and information.
The project follows a standard development process which includes planning, design, development, testing, deployment and maintenance phases.

It was developed in Java using Apache NetBeans IDE and MySQL database, by a team of year 2 students in the department of BIT \Business information technology\ - university of Rwanda Huye campus, as a final project for the module of advanced programming in java.