**INITIAL PROJECT REPORT**

*Dissertation submitted in fulfilment of the requirements for the Degree of*

**BACHELOR OF TECHNOLOGY**

**in**

**COMPUTER SCIENCE AND ENGINEERING**

**– DATA SCIENCE WITH MACHINE LEARNING**

By

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**DECLARATION STATEMENT**

I hereby declare that the work reported in the Assignment Project entitled "STUDENT RECORD SYSTEM” in partial fulfilment of the requirement for the award of Degree for Bachelor of Technology in Computer Science and Engineering – Data Science with Machine Learning at Lovely Professional University, Phagwara, Punjab is an authentic work carried out under supervision of my research supervisor Mr. Waseem Ud Din Wani. I have not submitted this work elsewhere for any degree or diploma.

I understand that the work presented herewith is in direct compliance with Lovely Professional University’s Policy on plagiarism, intellectual property rights, and highest standards of moral and ethical conduct. Therefore, to the best of my knowledge, the content of this dissertation represents authentic and honest research effort conducted, in its entirety, by me. I am fully responsible for the contents of my dissertation work.

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**INTRODUCTION**

The Student Record System is a software application designed to streamline the management of student information within educational institutions. This system serves as a central repository for storing critical student data, including their names, IDs, and grades, while also facilitating the efficient generation of reports. With data structures and algorithms at its core, the Student Record System addresses the need for accurate record-keeping and reporting, offering educational institutions an effective tool to enhance administrative efficiency and data management.

In an era of digital transformation, the Student Record System responds to the increasing demand for automated data management in educational settings. By harnessing the power of data structures such as HashMaps or ArrayLists, the system enables educators and administrators to easily input, modify, and retrieve student information. Through this project, we aim to create a user-friendly interface that simplifies data handling, ultimately helping institutions maintain up-to-date and secure records, while also offering valuable insights through report generation.

**OBJECTIVES AND SCOPE OF THE PROJECT**

Objectives:

* To create a system that can store student records.
* To allow for the addition, modification, and deletion of student data.
* To generate various reports based on user queries.
* To provide a user-friendly interface for easy interaction.

Scope:

* Storing and managing student data.
* Generating reports based on criteria such as grades, student IDs, and names.
* Ensuring data integrity and security.
* Supporting the addition and removal of student records.
* Offering a simple command-line interface for user interaction.

**METHODOLOGY**

1. Storing and Managing Student Data: We employ a HashMap data structure to efficiently store and manage student records. Each student's data is stored with their unique ID as the key and associated information, including name and grade, as the value.
2. Generating Reports: To facilitate data-driven decision-making, we implement algorithms that enable the generation of reports. Users can request reports based on various criteria such as student grades, student IDs, or names. These algorithms ensure the accurate and prompt retrieval of pertinent data.
3. Ensuring Data Integrity and Security: Data integrity is maintained through rigorous validation checks, preventing the entry of erroneous or inconsistent data. Additionally, sensitive student information is safeguarded through access control and encryption measures to ensure compliance with data protection regulations.
4. Supporting Addition and Removal of Student Records: The system allows for the seamless addition and removal of student records, ensuring the database remains current and accurate. This functionality is crucial for reflecting changes in student enrollment and correcting data entry errors.
5. Offering a Simple Command-Line Interface: A user-friendly command-line interface (CLI) is provided for user interaction. This intuitive interface guides users through the system's features, making it accessible to individuals with varying levels of technical proficiency. The CLI enhances the overall user experience, making data management and reporting straightforward and efficient.

**FLOWCHART:**

The flowchart of the project illustrates the step-by-step process from inputting the processes to their execution using the Student Record System

**Algorithm Implementation (Pseudocode):**

// Initialize an empty HashMap to store student records

studentRecords = new HashMap()

while user\_input != "exit":

// Display menu options

displayMenu()

// Get user's choice

user\_choice = getUserChoice()

switch user\_choice:

case "1": // Add a new student record

addStudentRecord()

case "2": // Modify an existing student record

modifyStudentRecord()

case "3": // Delete a student record

deleteStudentRecord()

case "4": // Generate a report

generateReport()

case "5": // Display all student records

displayAllRecords()

case "6": // Exit the program

user\_input = "exit"

default:

displayErrorMessage()

// Exit the program

exitProgram()

While this is the Psuedo code for the project the actual code and code for all the methods is yet to be written.

**SUMMARY**

The Student Record System project aims to provide a solution for managing student information efficiently. By using data structures and algorithms, this system will simplify data storage and reporting. With a user-friendly interface, it will be a valuable tool for educational institutions to maintain accurate student records. The project will proceed with the implementation of the methodologies and functionalities outlined in this report.