
# RAJALAKSHMI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution, Affiliated to Anna University, Chennai)

**DEPARTMENT OF CSE (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)**

**ACADEMIC YEAR 2025 – 2026**

**SEMESTER III**

**ARTIFICIAL INTELLIGENCE LABORATORY**

## MINI PROJECT REPORT

| | |
|---|---|
| **REGISTER NUMBER** | 2117240030127 |
| **NAME** | SAKTHI J |
| **PROJECT TITLE** | STUDENT RESULT CLASSIFICATION SYSTEM |
| **FACULTY IN-CHARGE** | MS.M.BHAVANI |

**Signature of Faculty In-charge**

## INTRODUCTION

- The *Student Result Classification System* is an AI-based program that classifies students as **Pass** or **Fail** according to their performance in attendance, internal marks, and final exam marks. It eliminates manual evaluation and ensures quick, consistent, and fair classification.
- In traditional systems, teachers manually assess each student's performance, which is time-consuming and may lead to human bias or errors. The proposed system uses simple AI rule-based logic to automate this process. It checks whether a student meets the minimum thresholds in all categories to pass, ensuring uniform evaluation standards.
- This system can be viewed as a **rule-based AI model**, where each student's data is processed using a set of conditions. If the conditions are satisfied, the student is classified as *Pass*; otherwise, *Fail*. It demonstrates how decision-making logic can be implemented efficiently using basic programming

## PROBLEM STATEMENT

- Manually evaluating and classifying student results requires significant time and can lead to inconsistencies in decision-making. Teachers need to check attendance records, internal marks, and final marks for each student before concluding whether the student has passed or failed.
- There is a need for an intelligent system that automatically classifies student results based on predefined criteria, ensuring accuracy and saving time for educators.

## GOAL

- The goal of this project is to develop an **automated Student Result Classification System** that:
- Analyzes each student's attendance, internal marks, and final marks.
- Classifies them as *Pass* or *Fail* based on defined rules.
- Displays results clearly in a tabular format.
- This project shows how simple AI logic can enhance academic evaluation through automation and consistency.

## THEORETICAL BACKGROUND

### Automation in Education:

Automationplays an important role in reducing repetitive tasks in educational systems. Tasks like grading and classification can be automated using computer programs that apply consistent rules for evaluation.

### AI and Rule-Based Systems:

ArtificialIntelligenceprovidesmechanisms for decision-making through logical rules. In this system, *if-else* conditions act as AI rules that classify results. For example:

- If Attendance ≥ 70, Internal Marks ≥ 50, and Final Marks ≥ 60 → Pass
- Else → Fail

### Justification:

Thisapproach avoids subjective judgment and ensures equal evaluation criteria for all students. It is efficient, transparent, and easy to modify for different academic institutions.

## ALGORITHM EXPLANATION WITH EXAMPLE

- Start the program.
- Input student details: name, attendance, internal marks, and final marks.
- If attendance ≥ 70 and internal ≥ 50 and final ≥ 60 → classify as Pass.
- Else classify as Fail.
- Display results for all students.
- Show summary of total, passed, and failed students.
- Stop.
- **Example:**
  If a student has 85% attendance, 78 internal marks, and 82 final marks, the conditions are met — the system classifies the student as **Pass**.

## IMPLEMENTATION AND CODE

```
# ------------------------------------------------------------
# STUDENT RESULT CLASSIFICATION SYSTEM
# ------------------------------------------------------------
# AIM:
```

```
#     To classify students as Pass or Fail based on Attendance,
#     Internal Marks, and Final Marks using simple AI logic.
# ------------------------------------------------------------

# Step 1: Define Student Data
# ------------------------------------------------------------
students = [
    {"Name": "Arun", "Attendance": 85, "Internal_Marks": 78, "Final_Marks": 82},
    {"Name": "Bala", "Attendance": 60, "Internal_Marks": 55, "Final_Marks": 50},
    {"Name": "Chitra", "Attendance": 75, "Internal_Marks": 68, "Final_Marks":
70},
    {"Name": "Deepa", "Attendance": 45, "Internal_Marks": 42, "Final_Marks": 35},
    {"Name": "Elango", "Attendance": 90, "Internal_Marks": 82, "Final_Marks":
88},
    {"Name": "Fathima", "Attendance": 55, "Internal_Marks": 48, "Final_Marks":
45},
    {"Name": "Ganesh", "Attendance": 80, "Internal_Marks": 74, "Final_Marks":
75},
    {"Name": "Harini", "Attendance": 40, "Internal_Marks": 39, "Final_Marks":
40},
    {"Name": "Ishaan", "Attendance": 78, "Internal_Marks": 70, "Final_Marks":
73},
    {"Name": "Jaya", "Attendance": 66, "Internal_Marks": 60, "Final_Marks": 65}
]

# Step 2: Define classification function
# ------------------------------------------------------------
def classify_student(attendance, internal, final):
    """
    Function to classify students as Pass or Fail.
    The rule is based on simple threshold values:
    - Attendance must be at least 70%
    - Internal marks must be 50 or more
    - Final exam marks must be 60 or more
    """
    if attendance >= 70:
        if internal >= 50:
            if final >= 60:
                return "Pass"
            else:
                return "Fail"
        else:
            return "Fail"
    else:
```

```
        return "Fail"


# Step 3: Function to display student data neatly
# ------------------------------------------------------------
def display_header():
    print("\n🎓 STUDENT RESULT CLASSIFICATION SYSTEM")
    print("-" * 65)
    print("{:<10} {:<12} {:<15} {:<15} {:<10}".format(
        "Name", "Attendance", "Internal_Marks", "Final_Marks", "Result"
    ))
    print("-" * 65)


# Step 4: Display each student's result
# ------------------------------------------------------------
def display_results(students):
    """
    Loops through the student list and prints
    their marks along with classification result.
    """
    for student in students:
        name = student["Name"]
        attendance = student["Attendance"]
        internal = student["Internal_Marks"]
        final = student["Final_Marks"]
        result = classify_student(attendance, internal, final)

        # print each student's details in a table format
        print("{:<10} {:<12} {:<15} {:<15} {:<10}".format(
            name, attendance, internal, final, result
        ))


# Step 5: Display analysis summary
# ------------------------------------------------------------
def display_summary(students):
    """ Displays number of students who passed and failed.
    This gives an overall summary of the class performance.
    """ passed = 0 failed = 0
```

```
    for student in students:
        result=  classify_student(student["Attendance"],
                                  student["Internal_Marks"],
                                  student["Final_Marks"])
        ifresult =="Pass":
            passed+=1
        else:
            failed+=1

    total = len(students)
    print("-" * 65)
    print(f"TotalStudents  : {total}")
    print(f"Passed          : {passed}")
    print(f"Failed          : {failed}")
    print("-" * 65)


# Step 6: Main Program Execution
# ------------------------------------------------------------
def main():
    display_header() display_results(students) display_summary(students)
    print("\n✅ Classification Completed Successfully!\n")
    print("This simple AI-based program uses rule-based logic instead of complex


ML models.")
    print("Each student's result is predicted using manually set conditions.\n")


# Run the program
if __name__ == "__main__":
    main()
```

## OUTPUT

```
STUDENT RESULT CLASSIFICATION SYSTEM
------------------------------------------------------------
Name       Attendance   Internal_Marks  Final_Marks     Result
------------------------------------------------------------
Arun       85           78              82              Pass
Bala       60           55              50              Fail
Chitra     75           68              70              Pass
Deepa      45           42              35              Fail
Elango     90           82              88              Pass
Fathima    55           48              45              Fail
Ganesh     80           74              75              Pass
Harini     40           39              40              Fail
Ishaan     78           70              73              Pass
Jaya       66           60              65              Fail
------------------------------------------------------------
Total Students : 10
Passed         : 5
Failed         : 5
------------------------------------------------------------

Classification Completed Successfully!
```

## RESULTS AND FUTURE ENHANCEMENT

**Results:**

The project successfully classifies students' results using simple AI rule-based logic. The system produces accurate, unbiased, and fast classification results compared to manual evaluation.

**Future Enhancements:**

- Integrate real student data from a database or Excel sheet.
- Add a Graphical User Interface (GUI) for easier use.
- Extend to include grade prediction (A, B, C, etc.).
- Implement using machine learning for adaptive grading

| | |
|---|---|
| **Git Hub Link of the project and report** | https://github.com/sakthi-janakiraman/Ai-mini-project-/tree/8d45a16b742284db984d51d007d500f237db8945 |

## REFERENCES


- *Python Programming for Beginners* – John Zelle
- *Artificial Intelligence: A Modern Approach* – Stuart Russell & Peter Norvig
- TutorialsPoint – Python Decision Making
- GeeksforGeeks – Rule-Based Systems in AI
- Towards Data Science – Introduction to Automation in Education