Relative Grade Calculation System

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Technology: Python, Tkinter, openpyxl, tkinterdnd2
Type: Desktop GUI Application

Introduction

- This project automates the process of calculating student grades.
- It reads marks directly from an Excel sheet.
- Grades are assigned using a **Relative Grading System** instead of fixed cut-offs.
- The tool provides a clean GUI for teachers to easily search results.

Problem Statement

- Manual grading consumes time and effort.
- Calculating percentiles manually is difficult for large classes.
- High chance of mistakes in Excel-based or manual evaluation.
- Need for an easy, automatic, error-free grade calculation tool.

Objectives

- Automate grade calculation from Excel input.
- Apply **relative grading** for fair evaluation.
- Display student-wise result in a clean GUI.
- Support drag and drop + file upload.
- Allow unlimited subjects dynamically.

Title and Content Layout with SmartArt

- • **Python** – Main programming language
  • **tkinterdnd2** – Drag & Drop support
  • **openpyxl** – Reading Excel files
  • **Windows DPI scaling** – For 4K sharp GUI

System Workflow

Teacher uploads Excel file
System reads registration numbers & subjects
Marks extracted & converted to integers
Percentile calculation for each subject
Relative grade assigned
Student result displayed on GUI

Excel Format Requirement

- Excel sheet must contain:
- **Column 1:** Registration Number
- **Column 2 → N:** Marks of each subject
- First row → Subject names
- Unlimited subjects supported
- Example:
  Reg No | Subject 1 | Subject 2 | Subject 3 | ...

Relative Grading Logic

Grades are assigned based on class ranking:

- Top **2%** → **S Grade**
- Next **10%** → **A Grade**
- Next **20%** → **B Grade**
- Next **20%** → **C Grade**
- Next **20%** → **D Grade**
- Remaining → **E Grade**

Every subject is graded **independently**

Ensures fair comparison among students

Fail Criteria

- If a student scores **below 40** in any subject → **F Grade** + **FAIL**
- This rule overrides relative grading.
- Ensures minimum performance standard.

Features

- Simple & clean GUI
- Drag & Drop Excel support
- Auto calculation of percentile
- Unlimited subjects support
- Dynamic subject handling
- Result window with marks, grade & pass/fail
- Template Excel download option
- Modern theme and rounded buttons

Advantages

- Saves time & avoids manual calculations
- Zero chance of human error
- Highly scalable for any class size
- Teacher-friendly interface
- Ensures fair and consistent grading

Limitations

Incorrect Excel format may cause errors
Only numeric marks supported
GUI resolution optimized for Windows
No built-in dark mode yet

Future Enhancements

- Export result to PDF
- Generate report for the entire class
- Add dark mode & animations
- Add student performance analytics
- Add database integration
- Convert into web application

Conclusion

- The Relative Grade Calculation System provides a fast, automated, and accurate way to calculate student grades.
- It reduces teacher workload and ensures fair evaluation using percentile-based relative grading.

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