



# DATE AND TIME APPLICATIONS

# Bachelor's of Technology  
## in Computer Science and Engineering

## UE25CS151A- PROJECT WORK PHASE -1

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# **DECLARATION**

I hereby declare that the Project Work Phase-I entitled “Date And Time Applications” has been carried out by us under the guidance of Mrs. Vidyashree K, Associate Professor and submitted in partial fulfillment of the course requirements for the award of degree of Master of Technology in Computer Science and Engineering of PES University, Bengaluru during the academic semester November 2024 – February 2025. The matter embodied in this report has not been submitted to any other university or institution for the award of any degree.

# **ACKNOWLEDGMENT**

I would like to express my gratitude to Mrs. Vidyashree K, Associate Professor, Department of Computer Science and Engineering, PES University, for her continuous guidance, assistance, and encouragement throughout the development of this UE25CS151A – Project Work Phase – I.

I take this opportunity to thank Dr. Mamatha H R, Chairperson, Department of Computer Science and Engineering, PES University, for all the knowledge and support I have received from the department.

I am deeply grateful to Dr. M. R. Doreswamy, Chancellor, PES University, Prof. Jawahar Doreswamy, Pro Chancellor – PES University, Dr. Suryaprasad J, Vice-Chancellor, PES University for providing me various opportunities and enlightenment every step of the way. Finally, this project could not have been completed without the continual support and encouragement I have received from my family and friends.

# **ABSTRACT**

Public speaking is a significant skill in both working and private life, but many encounter difficulty in effective speaking through obstacles such as filler use, incorrect tone, lack of eye contact, and poor face expression. To overcome these, in this work, an AI-powered public speaking assistant is proposed, one capable of analyzing and providing feedback regarding significant speech delivery factors. The system employs advanced NLP algorithms for tracking and measuring filler presence and speech emotion, speech emotion classification into such types as fear, neutrality, sadness, and happiness, and computer vision algorithms for tracking eye contact and face expression during speech delivery. By combining these analysis, the system generates in-depth, actionable feedback to allow improvement in speaking skills. With its objective, real-time, and fact-based feedback, proposed work can make one a more effective and confident speaker and can have a range of potential applications in training, working life, and private life, offering a cost-effective and accessible tool for public improvement in public speaking skills.

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Figure 6 Countdown Timer – Countdown Result Display to be  
added

# Project Report

## Date Utility Application with GUI Interfaces

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### 1. Title

**Date Utility Application – Day Calculator, Age Calculator, and Countdown Timer**

#### **1.1 Purpose of Project:**

To develop a user-friendly application that provides essential date utilities (day of week, age calculation, and countdown to future events) through intuitive graphical interfaces.

#### **1.2 Scope of Application:**

The application covers three core functions—weekday determination, age calculation, and event countdown—using modular logic and separate GUIs, while excluding advanced calendar scheduling or external integrations beyond basic input and output.

#### **1.3 Organisation of Report:**

This report is structured to present the introduction and motivation, followed by objectives, design and methodology, implementation, challenges faced, results, conclusion, and future enhancements.

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### 2. Problem Statement

In daily life, people often need quick date-related information such as the day of the week for a date, someone's age based on their birthdate, or the remaining time until an upcoming event. Though many tools exist online or in programming environments, there was a need for a **self-contained desktop application** that provides these utilities via a **user-friendly graphical interface**, without requiring internet access or technical expertise.

This project addresses that gap by creating a modular application with three functionalities:

1. Calculating the **day of the week** for any given date
  2. Calculating a person's **age** based on their birthdate
  3. Counting down to a **future event**, showing time left in days, hours, minutes, and seconds
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### 3. Objectives

- Design and implement reusable date-processing logic.
  - Build three standalone GUI tools:
    - **Day of Week Calculator**
    - **Age Calculator**
    - **Countdown to Future Event**
  - Ensure user input validation and clear user feedback.
  - Apply modular design by separating core logic from the graphical interfaces.
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### 4. Approach

#### 4.1 Modular Logic Layer

All core date calculations (day of the week, age, and countdown) were developed in a separate module. This module encapsulates functions that:

- Validate and parse dates
- Compute results (e.g., weekday names, age in years, remaining time)
- Return results in consistent formats for the GUIs to display

By isolating the logic, the application becomes easier to maintain, test, and reuse across multiple interfaces.

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## 4.2 GUI Development

Three separate GUI programs were created using a standard desktop UI toolkit. Each GUI imports the relevant logic functions while focusing only on user interaction:

### 4.2.1 Day of Week GUI

- Users enter a date (day, month, year)
- Application shows the corresponding weekday (e.g., Monday, Tuesday)
- Invalid dates result in clear error messages

### 4.2.2 Age Calculator GUI

- Users enter a birthdate
- Application calculates the age in full years based on today's date
- Handles future dates gracefully by prompting correction

### 4.2.3 Countdown Timer GUI

- Users enter a future date and optional time
- Application calculates the time remaining until that event
- Displays result as: **days, hours, minutes, and seconds**
- Prevents countdown if date/time is in the past

Each GUI focuses on simplicity, clear labeling, and straightforward interaction so users can complete tasks efficiently.

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## 5. System Design

### 5.1 Core Logic Design

The core logic design defines the reusable date-processing functions that handle all calculations (weekday, age, countdown) independently from the user interface, ensuring modular, maintainable, and testable code.

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## 5.2 GUI Workflow Design

The GUI workflow design outlines how each tool (day calculator, age calculator, countdown) collects input from the user, validates it, calls the core logic, and then shows the results interactively on screen.

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## 5.3 Interaction Flow

The interaction flow describes the user's sequence of actions—opening the tool, entering a date/time, submitting, and viewing results—along with how the system responds at each step, including validation and feedback.

# 6. Implementation

## 6.1 Day of Week Calculator

The day of week calculator takes user-entered day, month, and year values, validates the date, and computes the corresponding weekday using built-in date utilities, then displays it in the GUI.

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## 6.2 Age Calculator

The age calculator accepts a birth date, checks its validity against the current date, computes the age in years, and shows the result through the interface.

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## 6.3 Countdown to Event

The countdown tool receives a future date and optional time, calculates the time remaining from the current moment in days, hours, minutes, and seconds, and presents it to the user.

## 7. Challenges Faced

### 7.1 Input Validation

Handling free-form user input was challenging. Ensuring that all date entries are validated (e.g., rejecting February 30) without confusing users required careful checks and clear error messages.

### 7.2 Separation of Logic and Interface

Initially, application logic and GUI code were intertwined, making the design rigid and hard to maintain. Refactoring into a core logic module improved code quality but required careful restructuring.

### 7.3 Dynamic Time Calculations

The countdown feature needed continuous consideration of the current time. Calculating precise hours, minutes, and seconds until an event in the future — especially when user input could omit time — required thoughtful defaults and correct handling of time zones and system time.

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## 8. Results

The project successfully delivered:

- A set of **robust date-processing functions**
- Three user-friendly GUI applications
- Input validation and helpful error prompts
- Reusable, modular code architecture

Users can now determine weekdays, compute ages, and track upcoming events on their local machine without technical knowledge.

