Prolog Working Day Calculator – Report

1. Introduction

This document describes a Prolog program that calculates the date and day of the week after a specified number of working days from a given start date in the year 2024. The calculation excludes weekends (Saturday and Sunday) but does not consider public holidays.

2. Logic Description

The program is written in Prolog and operates under the assumption that 2024 is a leap year. It defines the number of days in each month and provides helper predicates to compute the day of the year, the day of the week, and to advance the calendar while skipping weekends.

3. Key Predicates

• month_days/2 – States how many days are in each month of 2024.

• sum_month_days/2 – Computes how many days have passed since the start of the year.

• day_of_year/3 – Calculates the day number of the year for a given date.

• weekday_number/3 – Determines the weekday number (1 = Monday, ..., 7 = Sunday).

• next_date/4 – Finds the next calendar date, rolling over months as needed.

• advance_work_days/5 – Advances the date by N working days, skipping weekends.

• pad2/2 – Ensures day and month numbers are two-digit strings (e.g. 5 becomes '05').

• n_work_days/3 – Main predicate: calculates the target date and weekday.

4. Example Queries

?- n_work_days('2205', 6, R).

R = 'Thursday, 3005'.

?- n_work_days('0106', 10, R).

R = 'Friday, 1406'.

5. Notes

• This code is valid only for the year 2024.

• Weekends are skipped, but public holidays are not handled.

• Input date must be given as a string in the format 'DDMM'.