

Abstract

This console-based Insurance Premium Management System written in C demonstrates basic policy record operations for a small insurance-admin tool: add new policies, list policies, search by policy ID or holder name, update policy details, delete policies, and calculate premiums using simple rules. The program persists policy records in a CSV file (policies.csv) to keep data between runs. It is designed for learning file I/O, structs, and CRUD operations in C.

Features

Add an insurance policy (Policy ID, Holder Name, Age, Policy Type, Sum Insured, Term years).

Display all policies in a readable table.

Search policies by ID or holder name (case-insensitive partial match).

Update policy details.

Delete policy records.

Calculate annual premium for a policy using a basic formula (type and age based adjustments).

Save all data to policies.csv for persistence.

Technical Requirements

C compiler (GCC recommended).

Terminal on macOS/Linux or Command Prompt on Windows.

~1 MB free disk space for program and data file.

Recommended compile command (macOS / Linux / WSL):

```
gcc insurance_premium.c -o insurance_premium -std=c11 -Wall -Wextra
```

Functional requirements

The program must start with a main menu showing options.

Users can add policies with unique integer Policy IDs.

All policies persist to policies.csv.

Display must present policies in a formatted table.

Search should be case-insensitive for holder names.

Update and delete operations must reflect immediately in the CSV file.

Premium calculation must validate inputs (e.g., age > 0, sum insured > 0).

Data storage file (policies.csv)

File: policies.csv

CSV headers: policy_id,holder_name,age,policy_type,sum_insured,term,annual_premium

Example line:

2001,John Doe,35,Term,1000000,20,12500.00

Notes:

policy_id is an integer and must be unique.

policy_type is one of: Term, Endowment, WholeLife (program enforces basic types).

annual_premium is calculated and saved as a decimal.