

# Compound Interest Calculator

## Rationale

This is a simple shiny app to solve a niche problem, designed after a conversation with my fiancé. If you have to quickly work out interest rates that change often over time but only wish to compound the totals at the end of specific periods of time this may work for you.

## How it Works

The app is split into two sections: firstly it has “compound periods” which are broken up by “interest periods.” The first compound period uses the input total to calculate interest over the specified time period and at the interest rate specified. This is weighted based on the proportion of the year using the formula read from left to right: interest rate / 365 (or 366 on leap years) \* number of days in the period / 100 \* input total for compound period. This interest amount is added to the input total. If interest periods are added they set a new interest rate until the next interest period or end of current compound period.

Interest periods always base their interest calculation on the initial compound period input but in the output table add this to the end total of the previous interest period. Interest periods within a compound period **do not compound**.

Subsequent compound periods use the end total of the previous compound period as the input total. Totals of compound periods **do compound**.

An output table generates on clicking calculate and will update on subsequent clicks, this can be exported to excel via a button press.

## Known Quirks/Issues

Rounding is done at each section to 2 decimal places. This is to simulate how calculations are done manually which allows results to be easily verified and leads to a clean output table.

Removing compound periods in progress caused issues with adding interest periods. As such I have removed the option and replaced it with a full reset button. I may fix this in the future, in the meantime consider how many compound periods you need in advance to avoid having to start over.