***Dynamic retirement model***

This is a dynamic retirement model in which we have to determine, in how many years a person will able to retire with the desired cash considering his initial salary , his promotions , his saving rate and interest rate on the savings.

Under this model, we have to calculate each year salary considering cost of living raise factor and promotion factor. We have to also calculate wealth of a person each year considering saving rate and interest rate. And lastly we have to calculate, how much cash required for the retirement.

This model is built in python. So we have divided this model into three sub-model called salary , wealth and retirement. First we import dataclass from dataclasses in python. A class is constructed to manage the data, and an instance of the class containing the default inputs is created.

Now we start our first sub-model i.e. salary. We assume that the salary grows at a constant rate each year for cost of living raises, and then also every number of years, the salary increases by a further percentage due to a promotion or switching jobs. In python, we first defined salary then we calculate number of promotion and after the calculation of number of promotion, we calculated salary at given year. Now for getting salary output each year, we use for loop function. Now we have each year’s salary taking consideration of cost of living factor and promotions.

Now we come to our second sub-model i.e. wealth. The wealth portion of the model is concerned with applying the savings rate to the earned salary to calculate the cash saved, accumulating the cash saved over time, and applying the investment rate to the accumulated wealth. First we calculated cash saved each year by simply multiplying salary and saving rate. We assume prior wealth at starting is 0. Now we calculated wealth at each year by first defining the wealth function then multiplying the prior wealth to 1+ interest rate and add the saving from current year. Now we again use for loop function to get wealth at each year

Here is the last sub-model retirement. This section of the model puts everything together to produce the final output of years to retirement. It uses the logic to get the wealth at each year, which in turn uses the logic to the get salary at each year. The wealth at each year is tracked over time until it hits the desired cash. Once the wealth hits the desired cash, the individual is able to retire so that year is returned as the years to retirement.

Now we have years to retirement and because this is dynamic retirement model, we can change any parameter and get the desired result.