**Retirement Planning System**

Most companies have some kind of plan set up to encourage and help their employees to save money. In many of these plans the employee can contribute some percentage of their earnings into a savings account via automatic deductions from their paycheck. Often the company will even offer to "match" some portion of the amount that the employee saves. For instance, the company might contribute $0.25 for every dollar you contribute that qualifies for the match. Of course, all these contributions are invested in stocks, bonds or mutual funds so this money will earn some sort of investment return.

In this assignment, we will create a spreadsheet model of a company's savings plan that can be used to project how much a person could accumulate over his or her working career. This will depend, of course, on a number of factors such as: how old the person is when he starts working, what his starting salary is, how much his salary is expected to grow each year, what percentage of his salary he wants to contribute to the savings plan, how much the company will "match", and the expected rate of return on the investments. Thus, the first sheet in your model should allow the user to enter this information (see the sheet named "Data" on the next page).

After the necessary information has been entered, a second sheet should calculate (on a year-by-year basis) the person's age, salary, beginning balance in the savings plan, the amount the employee would contribute for the year, the amount of the employer "match", the investment earnings for the year and the ending balance in the savings plan (see the sheet named "Balances" on the next page).

Assume employees in this company can contribute up to ten percent of their earnings to the savings plan, but only the first six percent qualifies for the company match. Thus, if a person contributes six percent or less, the entire contribution qualifies for the match. On the other hand, if a person contributes more than six percent, only the first six percent qualifies for the match and the rest does not. For instance, if a person contributed a total of 8%, the first 6% contributed would qualify for the company match and the other 2% would not qualify.

**SOME HELPFUL HINTS**

The "Beginning Balance" for the first year will always be zero.

Assume the balance at the beginning of any year earns the expected investment return for that year.

The employee's contributions are made periodically (i.e., weekly, bi-weekly, or monthly) throughout the year with the total being shown in the "Employee Contribution" column. Thus, investment earnings should not be credited to the full "total" amount since this full "total" amount was not invested for the entire year. However, over the entire year the average amount of the employee's contributions invested would be roughly equal to one half of the total listed under "Employee Contributions". Therefore, interest (or "investment earnings") on the employee's contributions in a year should be credited on half of the total Employee Contribution.

Assume the "Company Match" is made at the end of the year and therefore does not receive any investment earnings in the year in which it is contributed.

The MIN( ) function could be useful in calculating the "Company Match." As an example, MIN(a,b,c,...,z) returns the minimum of the values a, b, c, ..., z, where a, b, c,..., z may be numeric constants (i.e., numbers), cell addresses and/or ranges of values.

If you get the formulas for the second year entered correctly (using relative and absolute cell addresses) you can then easily copy this row to complete the spreadsheet.



