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Programming for All - Python

Review Exercises (R1.12 - R1.13)

R1.12 Write an algorithm to settle the following question: A bank account starts out with $10,000. Interest is compounded monthly at 0.5 percent per month. Every month, $500 is withdrawn to meet college expenses. After how many years is the account depleted?

First, start with the account having $10,000 and set the interest to grow at 0.5% every month. Also every $500 is taken out for college stuff. Make something that counts how many months go by and start it at 0. As long as there's still money left in the account, keep adding interest to the balance by multiplying it by 1.005 and then subtract the $500. Don't forget to add one to the months counter after each month. When the account runs out of money (like when it hits zero or goes negative), stop everything. Then, change the number of months into years by dividing it by 12, and show how many years it took for the account to go empty.

••• R1.13 Consider the question in Exercise •• R1.12. Suppose the numbers ($10,000, 6 percent, $500) were user selectable. Are there values for which the algorithm you developed would not terminate? If so, change the algorithm to make sure it always terminates.