Section 3: Portfolio and Investment Year Methods

A quality of human behavior that many investors possess is that they will search for the highest return for their initial investment, but will not actively manage their investment by continuing to search for the highest return thereafter. Banks and other financial institutions that compete for the deposits of investors use **investment year** and **portfolio** interest rates as a means to try to capitalize on this behavior.

Investment year interest rates are "new money" rates that are typically higher than ongoing portfolio rates and are used to entice investors to deposit their money with the financial institution advertising the rates. For example, for new deposits at the beginning of 2010, an institution may have offered an interest rate of 6% (this is an *investment year* rate), whereas for other deposits (say money that was initially deposited in 2006), they may only be paying a 2010 interest rate of 5% (this is a *portfolio* rate). We usually capture investment year and portfolio rates in a table. The following table illustrates a 2-year investment year/portfolio interest rate table.

Year	Investment Year Rates		Portfolio Rates
Y	i_1^y	i_2^y	i^{Y+2}
2008	5.5%	5.5%	5.0%
2009	6.0%	5.5%	4.0%
2010	6.0%	5.0%	3.0%
2011	5.5%	4.5%	3.0%

We read the table across and then down. For example, corresponding to the row for year 2009, reading across and then down, we have $i_1^{2009} = 6.0\%$, $i_2^{2009} = 5.5\%$, $i^{2011} = 4.0\%$, $i^{2012} = 3.0\%$, and $i^{2013} = 3.0\%$. This means that the new money rate for deposits made at the beginning of 2009 is 6% for the first year (2009) and 5.5% for the second year (2010). Then the new money reverts back to the portfolio and earns the portfolio rates of 4% for 2011 and 3% for years 2012 and 2013.

Module 4 Section 3 Problems:

For each problem below, use the 2-year investment year/portfolio interest rate table from the previous page, repeated here for your convenience.

Year	Investment Year Rates		Portfolio Rates
Y	i_1^y	i_2^y	i^{Y+2}
2008	5.5%	5.5%	5.0%
2009	6.0%	5.5%	4.0%
2010	6.0%	5.0%	3.0%
2011	5.5%	4.5%	3.0%

1. Determine the total accumulated value on 12/31/2013 if 1000 is deposited on 1/1/2009 and another 500 is deposited on 1/1/2011.

2. Unfortunately your incompetent coworker was charged with inputting the investment year rates and portfolio rates in the above table, and there is a mistake. Although it is true that portfolio rates for 2012 and 2013 are equal, the value for these rates is strictly between 1% and 3%. It is known that a particular investor deposited 300 at the beginning of 2010 and another 300 at the beginning of 2011 and on 12/31/2013 had an account balance of 689.81. Determine the 2012 (and 2013) portfolio rate.

Answers to Module 4 Section 3 Problems

1) 1801.64

2) 0.025