Ralph's Note

Ralph is in need of capital to finance his firm's operations. He goes to Alice for help. Alice offers several options: (1) borrow $100 at a 10% annual interest rate (interest compounded annually), interest and principal to be repaid in five years, (2) borrow $100 via a 10% per annum (nominal rate – effectively, six month compounding) installment loan to be repaid in ten installments due at the end of each six month period, or (3) borrow $100 today via a promissory note with no stated interest rate and repay $160 in five years.

Required:

1. Determine the journal entries for each of the alternatives over the life of the loan for both Ralph (borrower) and Alice (lender).
(hint: Create a loan amortization schedule for each.)

2. Prepare partial financial statements and a directed graph for the first period for each loan alternative for both Ralph and Alice.
What changes would occur if there is a substantial default risk?
(A directed graph of the financial statements creates a node for each account and arcs for each transaction. Include the amount of each transaction and the net change for each account over the period.)

3. Which of the alternatives has the highest effective interest rate? Which alternative results in the greatest interest expense over the life of the loan? Is it the same loan? If not, why?

4. Suppose interest on the first loan is compounded continuously (a nominal annual rate of 10% still applies). What is the effective interest rate? How much interest would accrue over the term of the loan?

5. What is the nominal annual rate associated with a continuously compounded effective annual yield equal to 10%? Why is the continuously compounded rate useful?