AD 420 – Entrepreneurial Finance
Homework 2
Due @23:59 pm on Sunday, December 3rd

1. Take Five Systems, a new start-up, is developing a new iPhone application ("app") and provides you with the following assumptions:
    a. Development and testing of the new app will take four months. Month five is the first month of revenue generation.
    b. Initial monthly app sales of 5,000 downloads at a price of $2.99
    c. Unit sales will grow at 15% per month for months six through twelve and then will be flat thereafter
    d. The app will become obsolete and will need to be revised/replaced after month 18

    Use the data provided to forecast Take Five's monthly revenue for Months 1-18
2. Take Five Systems is concerned about the accuracy of their revenue estimates above. Specifically, they wish to use sensitivity analysis to evaluate the impact on Month 18 revenue of the following:
    a. Variations in 2% increments between 9-21% in the growth rate of unit sales in Months 5-12 (that is, 9%, 11%,…, 19%, 21%)
    b. Variation in 500 unit increments between 2,500 and 7,500 in the level of initial sales (that is, 2,500, 3,000,…, 7,000, 7,500)
3. Use the following assumptions to develop a five-year set of pro forma statements. Make any additional assumptions you need. (You may need to use this template).
    a. The entrepreneur has $300,000 to invest in the venture, will raise an additional $150,000 from family members in exchange for equity, and will borrow $200,000 in the form of long-term debt. A total of $600,000 will be invested in fixed assets that can be depreciated on a straight-line basis over five years. The balance of initial investments will be held as cash. New capital investments are needed each year to maintain net fixed assets equal to 1.2 times expected sales in the subsequent year.
    b. Expected sales during the first year is $250,000. Sales are expected to double each year for the next two years, to increase by 50 percent in the fourth year, and to increase by 20 percent in the fifth and sixth years.
    c. Based on industry data, cost of goods sold is expected to be 25 percent of sales, selling expense is expected to be 12 percent of sales, and general and administrative expense is expected to be $100,000 plus 7 percent of sales. There are no other material operating expenses. The above figures exclude depreciation expenses.
    d. The interest rate on debt is expected to be 9 percent, and revenue from short-term investment of cash is expected to be negligible.
    e. The corporate tax rate is 35 percent. There is no tax loss carry forward.
    f. Typical experience in the industry for ventures that are growing rapidly is that accounts receivable equals 20 percent of ending sales; inventory is 15 percent of cost of goods sold; accounts payable is 8 percent of cost of goods sold; wages payable is 5 percent of cost of goods sold; and taxes payable is negligible.
    g. The venture needs to maintain a cash balance equal to the lesser of 20 percent of annual sales or $50,000.

   h. If additional financing is needed, the entrepreneur hopes to use long-term debt to the extent that profitability is sufficient to cover interest expense (so that the full tax advantage of debt financing is realized).

4. A new software start-up, Lutoj, Inc., is developing a new smart home software product. Lutoj believes revenue must reach $5 million in Year 3 for the product to be viable. Lutoj's operating margin (EBIT/Sales) is 20%, the tax rate is 30%, and asset turnover is 5X. The founders have $200,000 between them for initial equity funding. Assume Lutoj will pay no dividend.
   a. With no other financing, will the $200,000 of founder investment be sufficient to achieve the Year 3 sales target? If not, what level of initial equity investment would be required?
   b. Assume Lutoj cannot raise additional equity, but will use debt to achieve the scale necessary to reach the Year 3 sales target. They can borrow at an 8% interest rate before tax. How much debt will initially be required?

Note: Note: Turn in a pdf copy of your solutions before the due date and time via Moodle. *Problem 3 is worth 40 points; problems 1,2 and 4 are worth 20 points each.*