Tutorial Example of a Decision Tree

It is known that 75% of all items produced by a prototype production line are good (event '*G*'). A company makes a profit of $20 for every good item that it accepts, but a loss of $50 for each defective item (event '*D*') that it accepts.   The company makes a loss of $10 for each item that it rejects (whether good or defective).

A test is available for a fee of $5 per item.   The test is not perfect.   A good item passes the test 90% of the time.   A defective item passes the test 10% of the time.

Construct a decision tree to represent this information, determine the optimum strategy to maximize the expected profit (assuming no aversion to risk) and calculate the maximum expected profit.

Show that, if the company decides to invest in the test, then the decision on whether or not to accept the item will be determined by the test result.

The solution to this example will be presented in a tutorial in mid June.