An advertisement in the newspaper offers a new car for sale or lease. The purchase price of the car is $43,240, or the car can be leased for 24 months for a monthly payment of $458, with a $7,500 down-payment. Under the lease option, there is a charge of 24 cents/mile for mileage above 30,000 miles for the 24 months, and a $550 security deposit, which is refundable at the end of the lease, must be deposited with the dealer. The car may be purchased at the end of the lease for $29,732. All other charges (taxes, maintenance, plates, etc.) are the same under both options.

Develop a simulation model to compare the net present value of buying or leasing the car for 24 months. To compare the two options a number of assumptions must be made. Assume that:

• The mileage driven over the 24 months can be approximated by an exponential distribution with mean 25,000 miles.

• The best estimate of the interest rate over the next 24 months is a normal distribution with mean 8.5% and standard deviation 1%.

• The value of the car at the end of 24 months is the same under both options (that is, if the car is purchased, the realizable value at the end of month 24 is $29,732 less 24 cents/mile for each mile over 30,000).