

**ENGINEERING H192**  
**DAILY ASSIGNMENT B18**

Large timber management companies are concerned with reforestation of harvested timberlands. A formula has been developed to compute the acreage reforested in a specified number of years based on the number of acres left uncut and the reforestation rate, which differs for different climates and species. If 1000 acres are left uncut and the reforestation rate is 5% (.05) then at the end of one year 1050 acres ( $1000 + .05 * 1000$ ) will be forested, and at the end of the second year 1102.5 acres ( $1050 + .05 * 1050$ ) will be forested.

A. Write a MATLAB function called **reforest** that, when sent the number of forested acres at the start, the reforestation rate and (optionally) the number of years, will calculate and return the number of acres that will be forested. Save your function in an M-file.

B. Write a MATLAB script (save it in a script M-file, **b18.m**) to test the function by using it to calculate the number of forested acres at the end of each year for a user-specified number of years. The user should be prompted to enter the number of acres left after harvesting, the reforestation rate, and the number of years to use in the calculation. Your script should then call the function repeatedly to get the number of forested acres at the end of each year and should display a table showing the initial number of forested acres and the number at the end of each year for the specified number of years.

The MATLAB command **rate = input('Enter the reforestation rate >')** can be used to get the reforestation rate from the keyboard and similar commands can be used for initial forested acreage and number of years to use.

You have the option of calling your function once and having it calculate and return a matrix containing data for each of the selected number of years or calling the function for each year and having it return the data for that year. The sample fprintf statements below assume doing the latter.

The MATLAB command **fprintf('Year      forested acres\n')** can be used for column headings for the table.

The MATLAB command **fprintf('start    %10.1f\n', acres)** can be used to display the initial conditions.

The MATLAB command **fprintf('%3d      %10.1f\n', year, acres)** can be used to display the data for each year.

Print your script file, **b18.m**, your **reforest** function file, and the results that were displayed in the MATLAB command window and submit them with this sheet.

Name \_\_\_\_\_ Instructor \_\_\_\_\_ Seat \_\_\_\_\_ Hour \_\_\_\_\_