EF 142 Spring 2023 Exam 1: Coding Practice

Let the following matrices be defined in the MATLAB workspace as:

A* =** [2, 3, 1; 5, -2, 2] and ***B = [1, 4, 3; 2, -3, -2]

C = [1:2:5] and ***D***= [4, -1; 3, -2]

What will be the output of the following; if the code will produce an error, write ERROR. Assume that each problem is done independently from the others.

1) `AB = A .* B`

2) `BD = D * B(1,:)`

3) `A(1,:) = 1`

4) `M = sum(C)`

5) `Q = [C, B(2,:)]`

6) `N = max(C)^2`

Debugging: Look through the script for mistakes that would cause the results of the following script to be unsatisfactory. There are a total of 3 lines of code in the script that contain mistakes. In the table provided below the script, specify the line number with the mistake and re-write the line of code beside it, correcting all errors discovered.

```
%% Basic Debugging Example
% Problem statement: Calculate surface tension of a falling drop of liquid
clc; clear;

%% Inputs and constants
SG = 0.79;        % specific gravity of liquid [-]
g =  9.81 m/s^2;  % acceleration due to gravity
d_water = 1000;   % density of water [kg/m^3]

% User inputs
R = input('Enter droplet radius [mm]: '); % ask user to enter value (number)
n = input('Enter liquid name: ','s'); % ask user to enter name (string)

%% Calculations
% Conversion
R_m = R/1000; % radius of droplet [m]

% Calculations
d = SG * d_w; % density of the liquid is specific gravity times density [kg/m^3]
ST = R_m^2 * g * d; % surface tension [kg/s^2] => [J/m^2]

%% Output
fprintf('\nThe surface tension of the %s drop is %s [J/m^2]\n', n, ST)
```

Line #	Corrected Code