```matlab
function [theta, J_history] = gradientDescentMulti(X, y, theta, alpha,
 num_iters)
%GRADIENTDESCENTMULTI Performs gradient descent to learn theta
%   theta = GRADIENTDESCENTMULTI(x, y, theta, alpha, num_iters)
 updates theta by
%   taking num_iters gradient steps with learning rate alpha

% Initialize some useful values
m = length(y); % number of training examples
J_history = zeros(num_iters, 1);
tempTheta = zeros(length(theta), 1);

for iter = 1:num_iters

    % ====================== YOUR CODE HERE ======================
    % Instructions: Perform a single gradient step on the parameter
 vector
    %               theta.
    %
    % Hint: While debugging, it can be useful to print out the values
    %       of the cost function (computeCostMulti) and gradient here.
    %
    for j = 1:length(theta)
        sum = 0;
        for i = 1:m
            h = theta.' * X(i,:).'; % key part: check study note!
            err = (h - y(i)) * X(i, j);
            sum = sum + err;
        end
        tempTheta(j) = theta(j) - alpha * sum / m;
    end

    theta(:, 1) = tempTheta(:, 1);
    % ============================================================

    % Save the cost J in every iteration
    J_history(iter) = computeCostMulti(X, y, theta);

end

end
```

```
Not enough input arguments.

Error in gradientDescentMulti (line 7)
m = length(y); % number of training examples
```

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