```
%Luniva Joshi, lj428, 232002133
function [topograph, lowHighDist] = generateTopographicalMap(alt, water)
    [m, n] = size(alt);
    topograph = zeros(m, n, 3, 'uint8');

    colors = struct( ...
        'blue', [0, 0, 255], ...
        'black', [0, 0, 0], ...
        'green', [0, 255, 0], ...
        'yellow', [255, 255, 0], ...
        'orange', [255, 165, 0], ...
        'red', [255, 0, 0], ...
        'white', [255, 255, 255], ...
        'cyan', [0, 255, 255], ...
        'purple', [128, 0, 128], ...
        'magenta', [255, 0, 255] ...
    );

    for i = 1:m
        for j = 1:n
            if water(i, j) == 1
                topograph(i, j, :) = colors.blue;
            elseif alt(i, j) < 0
                topograph(i, j, :) = colors.black;
            elseif alt(i, j) >= 0 && alt(i, j) < 1000
                topograph(i, j, :) = colors.green;
            elseif alt(i, j) >= 1000 && alt(i, j) < 2000
                topograph(i, j, :) = colors.yellow;
            elseif alt(i, j) >= 2000 && alt(i, j) < 3000
                topograph(i, j, :) = colors.orange;
            elseif alt(i, j) >= 3000 && alt(i, j) < 4000
                topograph(i, j, :) = colors.red;
            elseif alt(i, j) >= 4000 && alt(i, j) < 4500
                topograph(i, j, :) = colors.white;
            elseif alt(i, j) >= 4500
                topograph(i, j, :) = colors.cyan;
            end
        end
    end

    alt(alt == min(alt(:))) = -Inf;
    [lowRow, lowCol] = find(alt == min(alt(:)), 1);
    [highRow, highCol] = find(alt == max(alt(:)), 1);

    topograph(lowRow, lowCol, :) = colors.purple;
    topograph(highRow, highCol, :) = colors.magenta;

    lowHighDist = 10 * sqrt((lowRow - highRow)^2 + (lowCol - highCol)^2);
end
```

```
alt = readmatrix("L-alts.csv");
water = readmatrix("L-water.csv");
[topograph, lowHighDist] = generateTopographicalMap(alt, water);
image(topograph)
title("lj428")
```