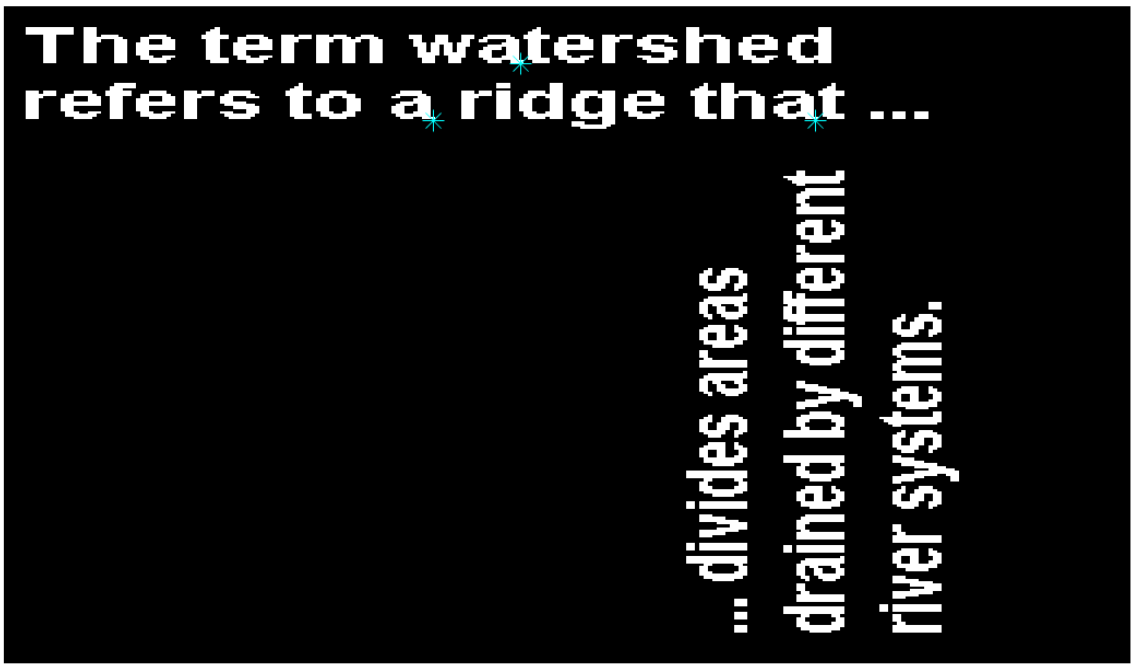
```
%=========================
%  Name:                hw8_1.m
%
%  Author:              Kairi Kozuma
%=========================

%================================ runmatch ================================
%
%  Loads the template image and the image data from file, then invokes the
%  template matching algorithm to find the instance of that template in
%  the image.
%
%================================ runmatch ================================

load('template.mat');                           % Should be in your path.

[xpts, ypts] = tmatch(I, tI);

fh = figure(1);
clf;
imagesc(I);
colormap('gray');
hold on;
plot(xpts, ypts,'c*','MarkerSize',10);
hold off;

axis off;

fprintf('The template matches the lower-right corner of the lowercase letter a\n');
fprintf('It would be better if the function could return the positions\n');
fprintf('of the rotated letter a`s in the picture.\n');

%================================ tmatch ================================
%
%  Performs cross-correlations using xcorr2 to find a template image
%  in another image.  Then retuns the points that are above 0.9 times the
%  peak value of the cross-correlation.  The image and template must be
%  grayscale.
%
%  [xpts, ypts] = tmatch(I, tI)
%
%
%================================ tmatch ================================
%
%  Name:        tmatch.m
%
%  Author:      Patricio A. Vela, pvela@ece.gatech.edu
%
%  Created:             01/19/2006
%  Modified:    01/19/2006
%
%  Notes:
%    Matlab's find function should be useful.
%    don't forget that (x,y) coordinate are not the same as (i,j) image
%    coordinates.
%
%    You should be able to run the following and have it work:
%    > [xp, yp] = tmatch(I, ti);
%    > imagesc(I);
%    > colormap('gray');
%    > hold on;
%    > plot(xp, yp, 'r+', 'MarkerSize', 10');
%    > hold off;
%
%================================ tmatch ================================
% function [xpts, ypts] = tmatch(I, tI)
%
% % Do cross correlation
% xc = xcorr2(I, tI);
%
% % Find peak and threshold value
% peak = max(max(xc));
% thresh = 0.9*peak;
```

```
% [ipts, jpts] = find(xc > thresh);
%
% % Change I,J to X,Y coordinates
% xpts = jpts;
% ypts = ipts;
%
% end
```

```
The template matches the lower-right corner of the lowercase letter a
It would be better if the function could return the positions
of the rotated letter a`s in the picture.
```



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