File: triangle_mf.m

```matlab
function mf = trap_mf(x, abc)
% File: triangle_mf.m

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% Project  :  Fuzzy Logic Controler for the Inverted Pendulum Problem
% Soft Computing
% Instructors:  Kai Goebel / Bill Cheetham


% Triangle MF using equation from page 2.19 of Jang Book

% File: triangle_mf.m
% This function calculates the triangle function.
% It is just like the trapazoid function except that you do not lop off the
% peak in the middle.
% It could also be calculated using the trapazoid mf, by making:
% a=a
% b=b
% c=b
% d=c
% i.e.    triangle_mf(x,[a b c]) = trapazoid_mf(x,[a b b c])


% Split up the parameter set.
 a  =  abc(1);
 b  =  abc(2);
 c  =  abc(3);

% Check if the parameters are proper.
if a > b,
     error('Error - a cannot be > b');
elseif b > c,
     error('Error - b cannot be > c');
elseif a > c,
     error('Error - a cannot be > c');
end

% Calculate left side.
left   = (x-a)/(b-a);
% Calculate right side.
right  = (c-x)/(c-b);


% Make a triangle shaped MF by taking min of left side and right side.
triangle = min(left, right);

% This last step makes everything outside the triangle,
% which would be less than zero, equal to zero.
mf = max(triangle, 0);
```