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```
function [truncatedTime, smoothedData] = M3_Smooth_001_30(dataArray,
 timeArray, segmentWidth);

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
% This user-defined functin will use the moving average method to
 smooth
% an array of data and return the smoothed array back to the calling
% function. Averages are done sequentially with the width given by
 user.
%
% Function Call
% [truncatedTime, smoothedData] = M3_Smooth_001_30(dataArray,
 timeArray, passWidth);
%
% Input Arguments
% dataArray - a one dimensional array containing the data for the
 product
%             conc. data of an enzyme at a given substrate conc.
 value.
% timeArray - the time data array. Will be returned at an appropriate
 length.
% passWidth - the width the function will use to calculate the moving
%             average. Must be an integer > 0 or error will be thrown.
%
% Output Arguments
% truncatedTime - the array of the time elements corresponding to
 smoothed
%                 data values.
% smoothedData - the array of smoothed data determined through the
 moving
%                average method.
%
% Assignment Information
```

```
%   Assignment:     Milestone 3
%   Team member:    Surya Manikhandan, smanikha@purdue.edu
%                   Julius Mesa, jmesa@purdue.edu
%                   Alex Norkus, anorkus@purdue.edu
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%   Team ID:        001-30
%   Academic Integrity:
%     [] We worked with one or more peers but our collaboration
%        maintained academic integrity.
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INPUT VALIDATION

```
inval = 0; % this flag value will hold whether or not any of the
 params are invalid

if((floor(segmentWidth) ~= segmentWidth) | (segmentWidth <= 0)) %
 check if width is a positive integer
    fprintf(2, "ERROR: passWidth parameter must be an integer greater
 than zero\n");
    inval = 1; % toggle flag
end

if(inval) % quit if any parameter is invalid
    return;
end
```

```
Not enough input arguments.

Error in M3_Smooth_001_30 (line 42)
if((floor(segmentWidth) ~= segmentWidth) | (segmentWidth <= 0)) %
 check if width is a positive integer
```

INITIALIZATION

CALCULATIONS

```
% initialize parameters needing output to void for now
smoothedData = [];
truncatedTime = [];

for index = 1:segmentWidth:(length(dataArray) - segmentWidth)
```

```
        % isolate segment of width from dataset
        dataSegment = dataArray(index : index+segmentWidth);
        timeSegment = timeArray(index: index+segmentWidth);

        % sum all elements in the segment
        sumDataSegment = sum(dataSegment);
        sunTimeSegment = sum(timeSegment);

        % take average of elements in that array
        avgDataSegment = sumDataSegment / (segmentWidth + 1);
        avgTimeSegment = sunTimeSegment / (segmentWidth + 1);

        % add the averaged val to final output
        smoothedData = [smoothedData, avgDataSegment];
        truncatedTime = [truncatedTime, avgTimeSegment];

    end
```

FORMATTED TEXT/FIGURE DISPLAYS

COMMAND WINDOW OUTPUT

ACADEMIC INTEGRITY STATEMENT

We have not used source code obtained from any other unauthorized source, either modified or unmodified. Neither have we provided access to my code to another. The function we are submitting is our own original work.

```
end
```

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