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% ASEN 3128-011
% detectGround.m
% Created: 8/30/22

function [value, isterminal, direction] = detectGround(t, X)
%
% Inputs:      t = Time vector
%              X = State vector
%              = [x; y; z; vx; vy; vz]
%
% Outputs:     value = Value of state vector z component
%               isterminal = Boolean used to stop or continue integration
%               direction = Indicator for detecting when a value occurs
%
% Methodology: Function passed to odeset that detects when to stop
%               integration based on the value of a specified state vector
%               component

% Interested in detecting when z goes to 0
z = X(3);

value = z; % Look at the value of z
isterminal = 1; % 1: stop integration once z hits 0
direction = 1; % 1: Trigger when value goes to 0 from negative to positive
end
```

Published with MATLAB® R2022a