```
function [C,S] = joshStumpffCoeffs(n)
% AERO 351 code
% Generates the first n terms of the stumpff coeffcients for @S(z) and @C(z)
 in a vector

% these coeffs are used for the universal variable approach to orbital
 mechanics

% for use as companion function with joshStrumpffZ
% coeffs should be saved to workspace and reused to save compute time
% @S(z) == sum(S.*Z) == polyval(flip(S),z) : where Z = [z^0 z^1 ... z^n]
% @C(z) == sum(C.*Z) == polyval(flip(C),z) : where Z = [z^0 z^1 ... z^n]
arguments
    n (1,1) {mustBePositive,mustBeInteger} = 15;
end

C = zeros(1,n);
S = C;
for i = 1:n
    k = i-1;
    C(i) = (-1)^k*(1/factorial(2*k+2));
    S(i) = (-1)^k*(1/factorial(2*k+3));
end
end
```

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