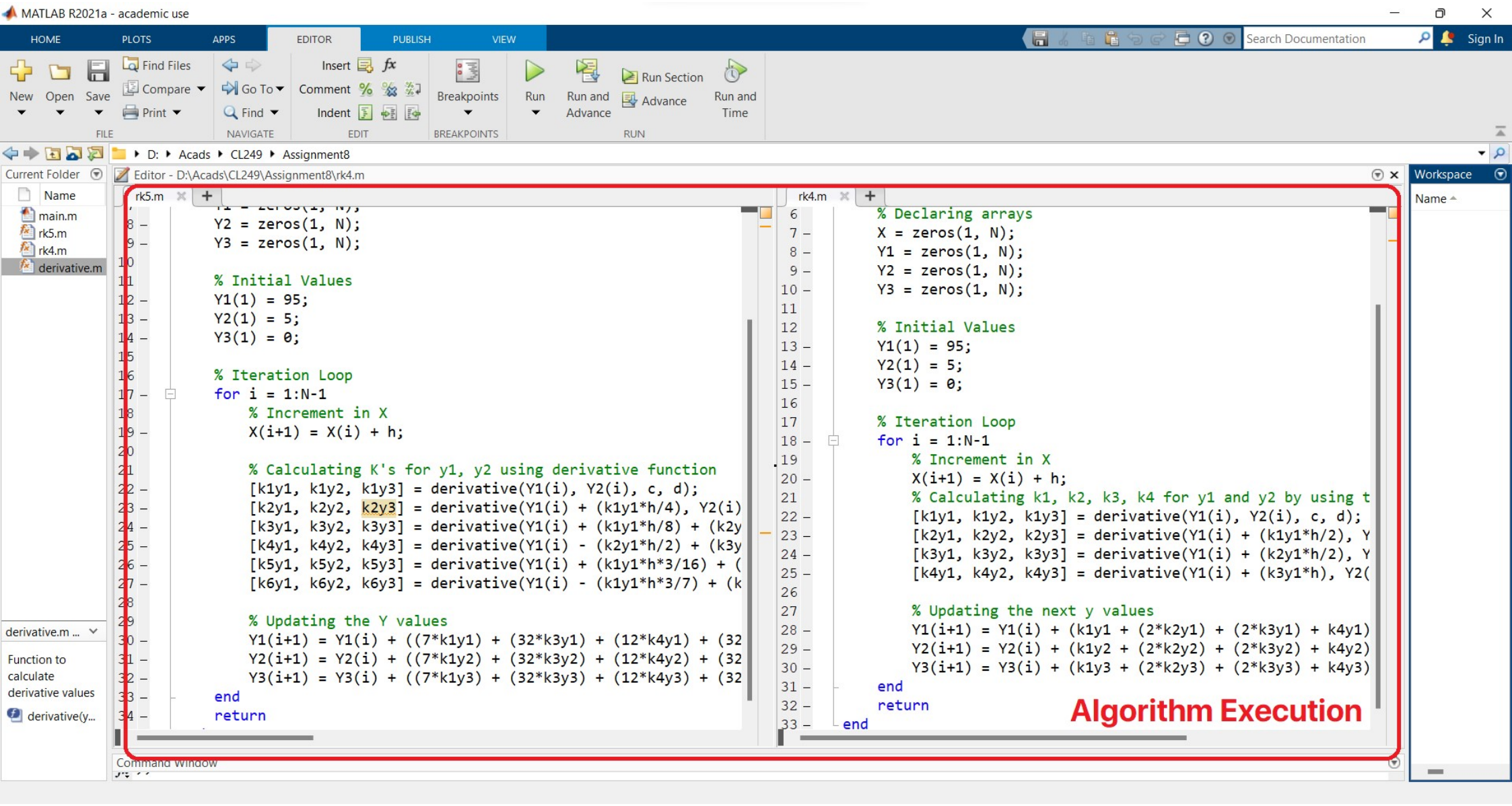
MATLAB R2021a - academic use
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D: ▸ Acads ▸ CL249 ▸ Assignment8
Current Folder
Name
main.m
rk5.m
rk4.m
derivative.m
Editor - D:\Acads\CL249\Assignment8\rk4.m
rk5.m
Y2 = zeros(1, N);
Y3 = zeros(1, N);
% Initial Values
Y1(1) = 95;
Y2(1) = 5;
Y3(1) = 0;
% Iteration Loop
for i = 1:N-1
% Increment in X
X(i+1) = X(i) + h;
% Calculating K's for y1, y2 using derivative function
[k1y1, k1y2, k1y3] = derivative(Y1(i), Y2(i), c, d);
[k2y1, k2y2, k2y3] = derivative(Y1(i) + (k1y1*h/4), Y2(i)
[k3y1, k3y2, k3y3] = derivative(Y1(i) + (k1y1*h/8) + (k2y
[k4y1, k4y2, k4y3] = derivative(Y1(i) - (k2y1*h/2) + (k3y
[k5y1, k5y2, k5y3] = derivative(Y1(i) + (k1y1*h*3/16) + (
[k6y1, k6y2, k6y3] = derivative(Y1(i) - (k1y1*h*3/7) + (k
% Updating the Y values
Y1(i+1) = Y1(i) + ((7*k1y1) + (32*k3y1) + (12*k4y1) + (32
Y2(i+1) = Y2(i) + ((7*k1y2) + (32*k3y2) + (12*k4y2) + (32
Y3(i+1) = Y3(i) + ((7*k1y3) + (32*k3y3) + (12*k4y3) + (32
end
return
rk4.m
% Declaring arrays
X = zeros(1, N);
Y1 = zeros(1, N);
Y2 = zeros(1, N);
Y3 = zeros(1, N);
% Initial Values
Y1(1) = 95;
Y2(1) = 5;
Y3(1) = 0;
% Iteration Loop
for i = 1:N-1
% Increment in X
X(i+1) = X(i) + h;
% Calculating k1, k2, k3, k4 for y1 and y2 by using t
[k1y1, k1y2, k1y3] = derivative(Y1(i), Y2(i), c, d);
[k2y1, k2y2, k2y3] = derivative(Y1(i) + (k1y1*h/2), Y
[k3y1, k3y2, k3y3] = derivative(Y1(i) + (k2y1*h/2), Y
[k4y1, k4y2, k4y3] = derivative(Y1(i) + (k3y1*h), Y2(
% Updating the next y values
Y1(i+1) = Y1(i) + (k1y1 + (2*k2y1) + (2*k3y1) + k4y1)
Y2(i+1) = Y2(i) + (k1y2 + (2*k2y2) + (2*k3y2) + k4y2)
Y3(i+1) = Y3(i) + (k1y3 + (2*k2y3) + (2*k3y3) + k4y3)
end
return
end
Algorithm Execution
Workspace
Name
derivative.m ...
Function to calculate derivative values
derivative(y...
Command Window