```
% Name (first and last)
% CSC 2262
% cs2262xx
% Sample 8c
global accuracy;
a = 1;
b = 3;
accuracy = 1e-4;
g = @(x) x*(x-1)^3/(x^2-2*x+5);
h = @(x) (x+7)/(1+1/3*x*sin(pi/4*(x-1)));
v = @(x,y) 0;
w = @(x,y) y+1;
f = @(z,x,y) (x*y*z+2*x+y^2).*exp(z) ./ sqrt(3*x^5+2*y^4+2*z.^3+7);
% First call of quad which does the first (outer) integral
mass = quad('middle',a,b,accuracy,[],'inner',g,h,f,v,w);
fprintf('mass = %.3f\n',mass);


% function middle
% Does the second (middle) integral by setting up the second call of quad
% and then making the second call of quad
function middle_integral = middle(x,inner,g,h,f,v,w)
global accuracy;
n = length(x);
for(k = 1:n)
    c = g(x(k));
    d = h(x(k));
    % Second call of quad which does the second (middle) integral
    middle_integral(k) = quad(inner,c,d,accuracy,[],x(k),f,v,w);
end


% function inner
% Does the third (inner) integral by setting up the third call of quad
% and then making the third call of quad
function inner_integral = inner(y,x,f,v,w)
global accuracy;
n=length(y);
for(k = 1:n)
    lower = v(x,y(k));
    upper = w(x,y(k));
    % Third call of quad which does the third (inner) integral
    inner_integral(k) = quad(f,lower,upper,accuracy,[],x,y(k));
end
```