```
function [J] = doubleSimpson(a, b, m, n, c, d, f)

    syms x y

    c(x) = c;
    d(x) = d;
    f(x, y) = f;

    h = (b - a)/n;
    J1 = 0;
    J2 = 0;
    J3 = 0;

    for i = 0:n

        x = a + i*h;
        HX = (d(x)-c(x))/m;
        K1 = f(x, c(x)) + f(x, d(x));
        K2 = 0;
        K3 = 0;

        for j = 1:m-1

            y = c(x) + j*HX;
            Q = f(x, y);

            if (mod(j, 2) == 0)
                K2 = K2 + Q;
            elseif (mod(j, 2) == 1)
                K3 = K3 + Q;
            end

        end

        L = (K1 + 2*K2 + 4*K3)*HX/3;

        if (i == 0 || i == n)
            J1 = J1 + L;
        elseif (mod(i, 2) == 0)
            J2 = J2 + L;
        else
            J3 = J3 + L;
        end

    end

    J = h*(J1 + 2*J2 + 4*J3)/3;

end
```