**MAT1011 – Calculus for Engineers (MATLAB), Fall Semester 2020-2021**

**Digital Assignment SL. 9, Experiment – 5A: Divergence, Curl and Gradient and visualization of vector field**

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**Q1) Write a program for divergence of the vector field F = x\*y^2 I + x^2 j and visualize it.**

A: Code is as follows:

%Write a program for divergence of the vector field

% F = x\*y^2 i + x^2 j and visualize it.

clear

clc

syms x y

f=input('Enter the 2D vector function in the form [f1,f2]:');

div(x,y)=divergence(f,[x,y])

P(x,y)=f(1);Q(x,y)=f(2);

x=linspace(-4,4,20);y=x;

[X,Y]=meshgrid(x,y);

U=P(X,Y);V=Q(X,Y);

figure

pcolor(X,Y,div(X,Y));

shading interp

hold on;

quiver(X,Y,U,V,1)

axis on

hold off;

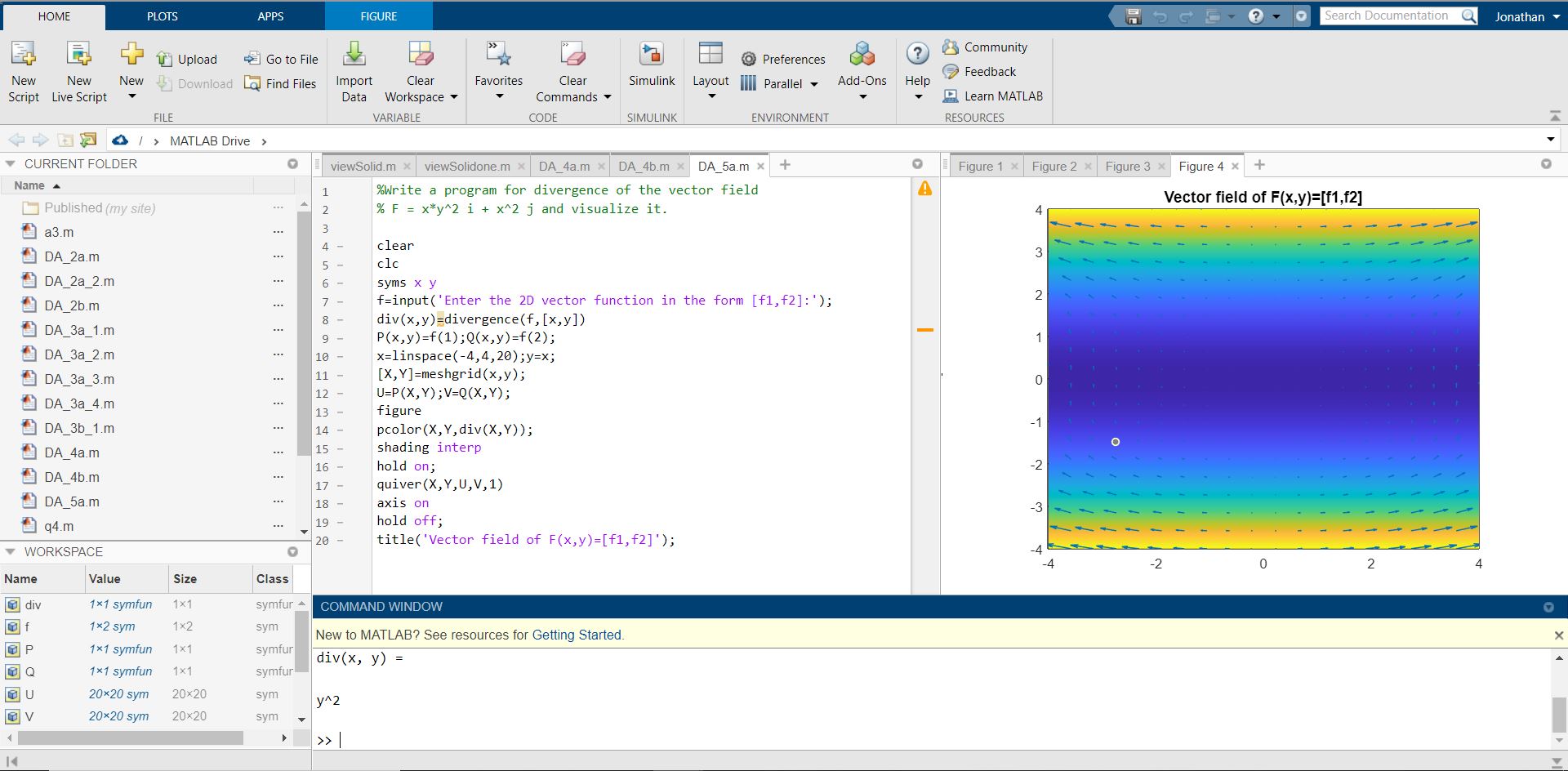
title('Vector field of F(x,y)=[f1,f2]');

**Output (via Command Window):**

Enter the 2D vector function in the form [f1,f2]:

[x\*y^2, x^2]

div(x, y) =  
   
y^2



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