

Code for Poly\_interp.m

```
N= 5;
x= linspace(1,10,N);
y=randi(10,[1,N]);
y = y.';
% prepare G matrix - Dimension (N+1) x (N+1)
% [x0^0 x0^1 x1^2 ..... x1^N]
% [x1^0 x1^1 x1^2 ..... x1^N]
% [x2^0 x2^1 x2^2 ..... x2^N]
%G = [x3^0 x3^1 x3^2 ..... x3^N]
% | : : : : : |
% [xN^0 xN^1 xN^2 ..... xN^N]
G=zeros(N,N);
for i = 1:N
    for j = 1:N
        G(i,j) = x(i)^(j-1);
    end
end
m = inv(G) * y;

xi = linspace(x(1),x(end),1000);

xi = xi.';
yi = zeros(1000,1);
for j=1:N
    yi = yi+m(j)*(xi.^(j-1))
end
plot(xi,yi)
hold on
plot(x,y,'o','markerFacecolor','y')
xlabel('X')
```

```
ylabel('Y')
```

```
title('Polynomial Interpolation')
```

output plot

