Assignment3.m

```
%Decompose Matrix using Gauss Elimination in the LDU form
clc

close all

clear all

A=input("Enter the elements in Matrix form")

N=length(A);

for i=1:N
    for j=i+1:N
        Etta = A(j,i)/A(i,i);
        A(j,:) = A(j,:)-Etta*A(i,:);
        EttaMatrix((j-1)+1,i) = Etta;
    end
end

L=EttaMatrix;
L(:,N)=zeros(N,1);
for i = 1:N
   L(i,i)=1;
end
Lower_Triangular_Matrix=L

Temp=diag(A);
D(:,N)=zeros(N,1);
for i = 1:N
   D(i,i)=Temp(i);
end
Diagonal_Matrix=D

I = eye(length(D));
Aug = [D I];
N = length(D);
for i=1:N
    Aug(i,:) = Aug(i,:)/Aug(i,i);
    for j=1:N
        if j~=i
            Key = Aug(j,i);
            Aug(j,:) = Aug(j,:)-Key*Aug(i,:);
        end
    end
end
r=(length(Aug)/2+1);

DM = Aug(:,r:end);
U = DM*A;
Upper_Triangular_Matrix = U

Product_of_LDU_decomposition = L*D*U

```