

# LU Decomposition Method:

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```
%LU Decomposition
```

```
Ab = [1 1 -1;3 5 6;7 8 9];
```

```
%% Forward Elimination
```

```
n= length(A);
```

```
L = eye(n);
```

```
% With A(1,1) as pivot Element
```

```
for i =2:3
```

```
alpha = Ab(i,1)/Ab(1,1);
```

```
L(i,1) = alpha;
```

```
Ab(i,:) = Ab(i,:) - alpha*Ab(1,:);
```

```
end
```

```
% With A(2,2) as pivot Element
```

```
i=3;
```

```
alpha = Ab(i,2)/Ab(2,2);
```

```
L(i,2) = alpha
```

```
Ab(i,:) = Ab(i,:) - alpha*Ab(2,:);
```

```
U = Ab(1:n,1:n)
```

OUTPUT

L =

1.0000	0	0
6.0000	1.0000	0
9.0000	1.0909	1.0000

U =

1	2	3
0	-11	-11
0	0	-17

# LU Decomposition Method:

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Practice Problems:

$$A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 2 & 4 \\ 1 & 1 & 5 \end{bmatrix}$$

$$A = \begin{bmatrix} -1 & 4 & 6 \\ 0 & -2 & 4 \\ 0 & 0 & 5 \end{bmatrix}$$