METODE NUMERIK
(Tugas 5.1)

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PROGRAM STUDI S-1 TEKNIK INFORMATIKA

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM

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```
// deklarasi matrix awal
a = [4 -1 1;
   4 -8 1;
   -2 1 5];
b = [7; -21; 15];
L = [1 0 0; 0 1 0; 0 0 1];

// dekomposisi a menjadi L dan U
// cari 3 komponen buat matrix L
L21 = (-1 * a(2,1))/(a(1,1));
i = 1;
while(i < 4)
   a(2, i) = (a(1, i) * L21) + a(2, i);
   i = i + 1;
end

L31 = (-1 * a(3,1))/(a(1,1));
i = 1;
while(i < 4)
   a(3, i) = (a(1, i) * L31) + a(3, i);
   i = i + 1;
end

L32 = (-1 * a(3,2))/(a(2,2));
i = 1;
while(i < 4)
   a(3, i) = (a(2, i) * L32) + a(3, i);
   i = i + 1;
end

L(2, 1) = -1 * L21;
L(3, 1) = -1 * L31;
L(3, 2) = -1 * L32;

// cari y
Y = [0;0;0];
Y(1,1) = b(1,1)/L(1,1);
Y(2, 1) = (b(2, 1) - Y(1,1) * L(2, 1)) / L(2, 2);
Y(3, 1) = (b(3, 1) - Y(1,1) * L(3, 1) - Y(2,1) * L(3, 2)) / L(3, 3);

// cari x
X = [0;0;0];
X(3, 1) = Y(3, 1) / a(3, 3);
X(2, 1) = (Y(2, 1) - X(3, 1) * a(2, 3) )/ a(2, 2);
X(1, 1) = (Y(1, 1) - X(3, 1) * a(1, 3) - X(2, 1) * a(1, 2) ) / a(1, 1);
```

```
a   =

   4.   -1.   1.
   0.   -7.   0.
   0.    0.   5.5

--> b
b   =

   7.
  -21.
   15.

--> L21
L21   =

  -1.

--> L31
L31   =

   0.5

--> L32
L32   =

   0.0714286

--> Y
Y   =

   7.
  -28.
   16.5

--> X
X   =

   2.
   4.
   3.
```