```
%%function x =  backsolv0 (A,b)
% function x =
% Solves an upper triangular system
% by back-substitution.
%-----------------------------------
 n = size(A,1);
 x = zeros(n,1);
 for i=n:-1:1
     t = b(i);
     for j=i+1:n                    | repeat: (n-i) times
         t = t - A(i,j)*x(j) ;     | 2 ops
     end                            |
     x(i) = t/A(i,i) ;             | 1 op
 end

 operation count:
 n
 ∑ [2(n-i) + 1]
 i=1  ==k

n-1
 ∑ [2 k + 1]  =   (n-1)*n + n = n²  exactly..
k=0


=======================================================================

ope. count GE.


%%function [x]  = gauss (A, b)
% function [x]  = gauss (A, b)
% solves A x  = b by Gaussian elimination
%-------------------------------------------
 n = size(A,1) ;
 for k=1:n-1
   for i=k+1:n                                      | repeat (n-k) times:
     piv = A(i,k) / A(k,k) ;                        | 1 op +
     A(i,k+1:n+1)=A(i,k+1:n+1)-piv*A(k,k+1:n+1);  | 2 * (n-k+1)=2(n-k)+2
   end
 end

n-1
 ∑ (n-k)( 2(n-k)+3)
k=1

set j = n-k

n-1
 ∑  j( 2j+3)
j=1

n-1
 ∑  [2 j² + 3 j]
j=1
 n-1
 2 ∑ j²  + 3 ∑j    = 2 (n-1)n(2n-1)/6 + 3 n(n-1)/2
j=1
                    = n(n-1) [ (2n-1)/3 + 3/2]
```

$$= n(n-1)\,(2n/3 + 7/6)$$

$$\approx 2\,n^3/3 + O(n^2) \qquad O(n^3)$$

Recall: $$\sum_{j=1}^{n} j^2 = n(n+1)(2n+1)/6$$