```
v := A v
v = v /α

A v^k  = α_k v^{k-1}

algorithm powerit.m prints α and  || Av - α v ||

Assumption in proof is

|λ_1 | > |λ_2|  ≥ |λ_3|  ≥ ....

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

QR preserses Hessenberg form

A = Hessenberg

A = QR  → shape of Q ??  Hessenberg
B = RQ  → shape is again Hessenberg


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

Transform A to Hessenberg form by Householder transformations

  x x x x x
  x x x x x
  0 x x x x
  0 x x x x
  0 x x x x

  v_1 = [0 x x x x]^T to make first column = [x x, 0 0 0]^T
      x[0
      x|0
      x|0
      x|0
      x|0


 B =  H*A = (I-β v v^T )A = A - β v (v^T A) = A - β v z^T

 B*H = A  (I-β v v^T ) = A - β (Av) v^T

======================================================
```