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 1: program aula11do03exe02
 2: PARAMETER (NNN = 100000)
 3: implicit real*8 (a-h,o-z)
 4: real*8 L1,L2,L3,L4,K1,K2,K3,K4,DIFF,EXATA,X
 5: Dimension Y(0:NNN)
 6: Dimension Z(0:NNN)
 7: open(14,file="edo-euler2nd-result-11do03exe2.txt")
 8: open(15,file="erro-edo2nd-11do03exe2.txt")
 9: H = 0.001d0
10: NSTEP = 5.d0/H
11: Y(0) = 1.d0
12: Z(0) = 0.d0
13: DO 10 IX = 0, NSTEP-1
14:    X = IX*H
15:    K1 = H*Z(IX)
16:    K2 = H*(Z(IX) + L1/2.0d0)
17:    K3 = H*(Z(IX) + L2/2.0d0)
18:    K4 = H*(Z(IX) + L3)
19:    Y(IX+1) = Y(IX) + (K1 + 2*K2 + 2*K3 + K4)/6.0d0
20:    L1 = H*func(X,Y(IX),Z(IX))
21:    L2 = H*func((X + H/2.d0), (Y(IX) + K1/2.d0), (Z(IX) + L1/2.d0))
22:    L3 = H*func((X + H/2.d0), (Y(IX) + K2/2.d0), (Z(IX) + L2/2.d0))
23:    L4 = H*func((X + H), (Y(IX) + K3), (Z(IX) + L3))
24:    Z(IX +1) = Z(IX) + (L1 + 2*L2 + 2*L3 + L4)/6.0d0
25:    DIFF = EXATA(X+H)-Y(IX+1)
26:    erro = dabs(DIFF/EXATA(X+H))
27:    write(14,*)X+H,Y(IX+1),EXATA(X+H)
28:    write(15,*)erro
29: 10 CONTINUE
30: end
31:
32: real*8 function func(X,Y,Z)
33: implicit real*8 (a-h,o-z)
34:      func = -Y-(X*Z)
35: end
36:
37: real*8 function exata(x)
38: implicit real*8 (a-h,o-z)
39:      exata = EXP(-0.5d0*x**2)
40: end
41:
```