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 1: program aula25do02exer02
 2: PARAMETER (NNN = 100000)
 3: real K1, K2, K3, K4
 4: Dimension y(0:NNN)
 5: open(14,file="erro_KUTTA.txt")
 6: open(15,file="erro_EULER.txt")
 7: H = 0.1
 8: NSTEP = 3./H
 9: y(0) = 1.
10: DO IX = 0, NSTEP-1
11:    X = IX*H
12:    Y(IX+1) = Y(IX) + H*func(X,Y(IX))
13:    DIFF = EXATA(X+H)-Y(IX+1)
14:    erro1 = abs(DIFF/EXATA(X+H))
15:    write(14,*)X+H,erro1
16: enddo
17: DO IX = 0, NSTEP-1
18:    X = IX*H
19:    K1 = H*FUNC(X, Y(IX))
20:    K2 = H*FUNC((X + 1/2*H), (Y(IX) + 1/2*K1))
21:    K3 = H*FUNC((X + 1/2*H), (Y(IX) + 1/2*K2))
22:    K4 = H*FUNC((X + H), (Y(IX) + K3))
23:    Y(IX+1) = Y(IX) + 1./6.*(K1 + 2*K2 + 2*K3 + K4)
24:    DIFF = EXATA(X+H)-Y(IX+1)
25:    erro2 = abs(DIFF/EXATA(X+H))
26:    write(15,*)X+H,erro2
27: enddo
28: end
29:
30: real function FUNC(X,Y)
31:      FUNC = -x*y
32: end
33:
34: real function exata(x)
35:      exata = EXP(-0.5*(X)**2)
36: end
```