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C      Main line program for Fibonacci Procedure
      dimension fib(50)
      open(unit=5,file='outfibon',status='unknown')
      ni=50
      no=66
      alpha=0.05e-1
      a=0.
      b=10.
c      read (*,*) alpha,a,b
016   format (8E10.4)
      del=b-a
      write (5,001)
001   format (1h1,10x,35hfibonacci single-variable procedure)
c      define the first three Fibonacci numbers
      fib0=1.0
      fib(1)=1.0
      fib(2)=2.0
c      calculate the remaining fibonacci numbers
5     bb=1.0/alpha
      if (bb-2.0) 10,10,11
10    goto 14
11    continue
      jj=2
12    jj=jj+1
      fib(jj)=fib(jj-1)+fib(jj-2)
      cc=fib(jj)
      if (cc-bb) 13,15,15
13    goto 12
14    write (5,002)
002   format (/ ,10x,42haccuracy specified in func not sufficient.,
1     10x,33hprogram reset alpha, alpha= 0.01 )
      alpha=0.01
      goto 5
c      first step in the tableau
15    i=0
      kk=jj-2
      ik=jj-2
      bl=b-a
      all=fib(ik)*bl/fib(jj)
      w=a+all
      v=b-all
      call func(w,t)
      call func(v,u)
      jk=1
      write (5,003)
003   format (//,1x,1hk,5x,2h1k,10x,2hak,11x,2hbk,09x,3h11k,11x,1hx,
1     12x,1hy)
      write (5,004) jk,bl,a,b,all,w,t
004   format (/ ,1x,i1,2x,e10.4,2x,e10.4,2x,e10.4,2x,e10.4,
1     2x,e10.4,2x,e10.4)
006   format (52x,e10.4,2x,e10.4)
c      succeeding steps in the tableau
      ik=ik-1
      jj=jj-1
      do 70 i=1,kk
      if(u-t) 20,20,22
20    a=a+all

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bl=b-a
w=v
call func(w,t)
all=fib(ik)*bl/fib(jj)
v=b-all
call func(v,u)
ii=i+1
ik=ik-1
jj=jj-1
if (ik-1) 28,29,29
28 ik=1
29 continue
write (5,004) ii,bl,a,b,all,w,t
write (5,006) v,j
goto 70
22 b=b-all
bl=b-a
v=w
call func(v,u)
all=fib(ik)*bl/fib(jj)
w=a+all
call func(w,t)
ii=i+1
ik=ik-1
jj=jj-1
if (ik-1) 30,31,31
30 ik=1
31 continue
write (5,004) ii,bl,a,b,all,v,u
write (5,006) w,t
goto 70
70 continue
c calculation of the final range of the dependent variable
eps=0.001*w
dl=w+eps
call func(dl,y1)
if(y1-t) 80,80,81
80 call func(b,bf)
write (5,007) w,b
007 format(/// ,25hthe final feasible region,2x,2hx=,
1 e10.4,2x,2hx=,e10.4)
write (5,008) t,bf
008 format(/ ,20hwith function values,7x,2hy=,e10.4,2x,2hy=,e10.4)
goto 87
81 call func(a,af)
write (5,009) w,a
009 format(///, 25hthe final feasible region,2x,2hx=,
1 e10.4,2x,2hx=,e10.4)
write (5,017) t,af
017 format (/ ,20hwith function values,7x,2hy=,e10.4,2x,2hy=,e10.4)
87 acc=(w-a)/(del)
write (5,018) acc
018 format (/ , 15hthe accuracy is,12x,e10.4)
write (5,019) alpha
019 format (/ ,25hthe required accuracy was,2x,e10.4)
999 continue
end

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subroutine func(x,y)
y=x**2-6*x+2.
return
end
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