

Quiz2 Solution

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1 Program code1
2 implicit none
3 !real (kind=16)::hanoi
4 integer::n,hanoi
5 Print*, 'Enter a integer number >1'
6 read*, n
7 print*, 'hanoi number of ',n,' is:',hanoi(n)
8 end program code1
9
10 recursive function hanoi (n) result (h)
11 ! computes the hanoi
12 implicit none
13 ! declaration dummy arguments
14 integer :: n,h
15 select case (n)
16 case (0:1)
17     h = 1
18 case default
19     h = 2 * hanoi(n-1)+1
20 end select
21 end function hanoi
22
23
24 Program code2
25 implicit none
26 real (kind=16)::x,xnew,res,tol
27 real::epsilon=1.0e-6
28 integer::j
29 x=rand() ! this is a guess
30 j=0
31 tol=1
32 do while(tol>=epsilon)
33     j=j+1
34     xnew=((-6.*x**3-500.)/900.)
35     tol=abs(xnew-x)
36     x=xnew
37 end do
38 Write(*,100) 'Answer:',x,' Number of iterations:',j
39 100 format(a, f12.6, a, i15)
40 res=6*x**3+900*x+500
41 write(*,*) res
42 end program code2
43
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46 Program code3
47 implicit none
48 real,dimension (:), allocatable :: x, xx
49 integer:: i,j,n,stat,z
50 real:: r
51 open(20,file='data.txt')
52 n=0
53 stat=0
54 do while(stat == 0)
55     n=n+1
56     read(20,*,iostat=stat)r
57 enddo
58 rewind(20)
59 Print*, 'Enter the number of elements you want to process'
60 write(*,50) 'Your entry shoulbe an integer number >1 and <', n-1
61 50 format (a,i3)
62 read (*,*) z
63 if (z<1 .or. z>n-1) stop
64 allocate(x(n-1))
65 do i=1,n-1
66     read(20,*) x(i)
67 end do
68 write(*,200)'The sum and maximum values of the first ',z,' elements are:'
69 200 format(a,i3,a)
70 Write (*,*) sum(x), minval(x)
71 allocate(xx(count(x>0)))
72 j=0
73 do i=1,n-1
74     if (x(i)>0) then
75         j=j+1
76         xx(j)=x(i)
77     end if
78 end do
79 open(30,file='output.txt')
80 do j=1,size(xx)-1
81     write(30,100) xx(j)
82 end do
83 100 format(f12.6)
84 write(*,*)'The sum and maximum values of the positive elements are:'
85 Write (*,*) sum(xx), maxval(xx)
86 deallocate(x)
87 deallocate(xx)
88 end program code3

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