

```

1:
2: *****
3: ./exercise4/internal4.f90
4:
5: PROGRAM internal4
6:
7: IMPLICIT NONE
8:
9: REAL :: a,b,c ! *** Declare a,b,c=0
10:
11: PRINT*, "Enter number one"
12: READ*, a
13: PRINT*, "Enter number two"
14: READ*, b
15:
16: CALL calc(a,b,c)
17:
18: PRINT '(/"IN MAIN PROGRAM", " a =",f5.2, " b =",f5.2, " c=",f5.2) ', a,b,c
19:
20: CONTAINS
21:
22: SUBROUTINE calc(d,e,f)
23:
24: REAL :: d,e,f ! *** Dummy variables
25:
26: f=SQRT(d**2+e**2)
27: PRINT '(/"[1] IN SUBROUTINE ", " a =",f5.2, " b =",f5.2, " c=",f5.2) ', a,b,c
28: a=d/2 ; b=e/2 ; c=f/2
29: PRINT '(/"[2] IN SUBROUTINE ", " a =",f5.2, " b =",f5.2, " c=",f5.2) ', a,b,c
30:
31: END SUBROUTINE calc
32:
33: END PROGRAM internal4
34: *****
35:
36: *****
37: ./exercise5/internal5.f90
38:
39:
40: PROGRAM internal5
41: ! *** Program to demonstrate a function
42: IMPLICIT NONE
43:
44: REAL :: a,b,c ! *** Declare a,b,c
45:
46: PRINT*, "Enter number one"
47: READ*, a
48: PRINT*, "Enter number two"
49: READ*, b
50:
51: c=calc(a,b)
52:
53: PRINT '( "Answer = ",f10.4) ', c
54:
55: CONTAINS
56:
57: FUNCTION calc(d,e)
58:
59: REAL :: d,e ! *** Dummy variables
60: REAL :: calc ! *** Local Variables
61:
62: calc=SQRT(d**2+e**2)
63:
64: END FUNCTION calc
65:
66: END PROGRAM internal5
67: *****

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68:
69: *****
70: ./exercise2/internal2.f90
71:
72: PROGRAM internal2
73: ! **** Example of a Program with an internal subroutine
74:
75: IMPLICIT NONE
76:
77: REAL :: a,b,c
78:
79: CALL calc(a,b,c)
80:
81: PRINT '( "Answer = ",f10.4) ', c
82:
83: CONTAINS
84:
85: SUBROUTINE calc(a,b,c)
86: REAL :: a,b,c !*** Dummy variable declaration
87:
88: PRINT*, "Enter number one"
89: READ*, a
90: PRINT*, "Enter number two"
91: READ*, b
92: c=SQRT(a**2+b**2)
93: END SUBROUTINE calc
94:
95: END PROGRAM internal2
96: *****
97:
98: *****
99: ./exercise3/internal3.f90
100:
101:
102: PROGRAM internal3
103: ! ** Demonstrate some aspects of scope
104: ! **
105: ! **
106:
107: IMPLICIT NONE
108:
109: REAL :: a,b,c ! *** Declare Local a,b,c to main program unit
110:
111: PRINT*, "Enter number one"
112: READ*, a
113: PRINT*, "Enter number two"
114: READ*, b
115:
116: CALL calc(a,b,c)
117:
118: PRINT '(/"IN MAIN PROGRAM", " a =",f5.2, " b =",f5.2, " c=",f5.2) ', a,b,c
119:
120: CONTAINS
121:
122: SUBROUTINE calc(d,e,f)
123:
124: REAL :: d,e,f ! *** Dummy variables
125: REAL :: a,b,c ! *** Declare a,b,c local to subroutine
126:
127: f=SQRT(d**2+e**2)
128: a=d/2 ; b=e/2 ; c=f/2
129: PRINT '(/"IN SUBROUTINE ", " a =",f5.2, " b =",f5.2, " c=",f5.2) ', a,b,c
130:
131: END SUBROUTINE calc
132:
133: END PROGRAM internal3
134: *****

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135:
136:
137: *****
138: ./exercise6/assume.f90
139:
140: PROGRAM assume
141: ! *** Example Program to demonstrate assumed shape arrays
142:
143: IMPLICIT NONE
144:
145: INTEGER :: i, j
146: INTEGER, PARAMETER :: m=5, n=6
147: REAL, DIMENSION(m,n) :: array
148: REAL :: ans
149:
150: DO i=1,m ! *** Assign the array elements a value
151:   DO j=1,n
152:     array(i,j)=i+j
153:   ENDDO
154: ENDDO
155:
156: ans=sumarr(array,m,n)
157:
158: PRINT '( "Summation of all elements = ",f10.4)',ans
159:
160: CONTAINS
161:
162: FUNCTION sumarr(aa,k,p)
163:
164: REAL, INTENT(IN), DIMENSION(:,:) :: aa ! *** Dummy variable
165: INTEGER, INTENT(IN) :: k,p ! *** Dummy variables
166: REAL :: sumarr
167:
168: sumarr=0 ! *** Set initially to be zero
169: DO i=1,k
170:   DO j=1,p
171:     sumarr=sumarr+aa(i,j)
172:   ENDDO
173: ENDDO
174:
175: END FUNCTION sumarr
176:
177: END PROGRAM assume
178: *****
179:
180:
181: *****
182: ./exercise1/interall.f90
183:
184: PROGRAM interall
185: ! *** Example of a Program with an internal subroutine
186:
187: IMPLICIT NONE
188:
189: REAL :: a,b,c
190:
191: CALL calc
192: PRINT '( "Answer = ",f10.4)',c
193:
194: CONTAINS
195:
196: SUBROUTINE calc
197: PRINT*, "Enter number one"
198: READ*,a
199: PRINT*, "Enter number two"
200: READ*,b
201: c=SQRT(a**2+b**2)

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202: END SUBROUTINE calc
203:
204: END PROGRAM interall
205: *****
206:

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