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1  `S8Help.txt`                2025.05.27.1125cdt JMS                Lines:194
2  IP Status- Free source code (e.g.: post copyright)
3  Author- Jeffrey M. Setterholm, Lakeville,MN 55044 USA
4  *** No warranties are expressed or implied. ***
5
6  This source code is approximately Fortran 95 with f90gl graphics which
7  builds and runs on a windows 10 computer as a `console` application
8  with various full-screen ~ DOS windows.
9
10 In Absoft Pro Fortran 21.0.2 there are two "glut32.dll"s ("dynamically-
11 linked libraries") with identical names that are not interchangeable files!
12
13 Use this file with Sn3D.exe in windows 10:
14 date &      time      Size(bytes) Name
15 11/01/2020  05:52 PM  258,736      glut32.dll  For the 32-Bit executables
16
17 Do not use this file with Sn3D.exe:
18 date &      time      Size(bytes) Name
19 11/01/2020  05:54 PM  307,376      glut32.dll  For the 64-Bit executables
20 note: slightly larger & created two minutes later.
21
22
23 A subdirectory of color-coded .pdf's of the source code is also included.
24
25 !-- Data Structures/Modules:
26 05/24/2025  07:53 PM                42,353 S1ModDef.f95                Group#1
27 ! Module OpenGLRec                !Ref: OpenGL GL/GLU/GLUT Documentation
28 ! Module TaskDef                  !Project/Context
29 ! Module ioDef                    !Files,Units,TimeStamp,Selfies,Flags
30 ! Module ScreenDef                !screen & colors
31 ! Module KeyboardDef              !Keyboard
32 ! Module MouseDef                 !Mouse
33 ! Module ViewDef                  !View bounds->[0.,+1.]>[extent]Destination
34 ! Module ModelDef                 !Modelview Matrix Generation
35 ! Module SimDef                   !Simulation F9-F12
36 ! Module HelpDef                  !Help (a text block)
37 ! Module AppsDef                  !User Apps F1-F8
38 ! Module F3dvDef                  !File .3dv data
39 ! Module BreakPtDef               !BreakPoint & Scrolling
40 ! Module UseAllBbDef              !Contents
41
42 05/24/2025  07:47 PM                15,393 S2ModCallbacks.f95            Group#2
43 !Module S2Callback                This directly interfaces with OpenGL
44 ! Subroutine cbUserView            !Called by: OpenGL
45 ! Subroutine cbKeyboard(Key,xCursor,yCursor)      "      :      "
46 ! Subroutine cbSpecialFunctionKeys(Key,xCursor,yCursor) "      :      "
47 ! Subroutine cbMouseMotion(ix,iY)  Active & Passive "      :      "
48 ! Subroutine cbMouseButtons(Button,State,ix,iY)   "      :      "
49 ! Subroutine GlutHandoff           "      : S3Main.f95
50 ! Subroutine CheckGL(Line)         ...checks for OpenGL errors      ^: once
51 !End Module S2Callback             referenced by Group#
52
53 !-- Subroutines & Functions:
54 05/24/2025  06:50 PM                34,962 S3Main.f95                Group#3
55 ! Program      S3Main              Main calling program & utilities
56 ! Subroutine BreakHere(iP,Label)
57 ! Subroutine jPause(Label)
58 ! Subroutine SaveOutFile
59 ! Subroutine M44V4multh(V4outh,Matrix44,V4inh,iP)
60 ! Subroutine M44multh(M44outh,M44Linh,M44Rinh,iP)
61 ! Subroutine h44Fill(Hout,A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P)
62 ! Subroutine Invertr8(N,MatrixIn,MatrixOut,iP)

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63 ! Subroutine Invertr16(N,A,ValMin,iRank,DetN,iUsed,iP)
64 ! Subroutine Printr16(N,A,Noise,iRank,DetN,iRu,jCu,iP)
65 ! Subroutine Rand16(n,Xrandom,iP)
66 ! Subroutine X12Y12toMB(X1,X2,Y1,Y2,M,B,iP)
67 ! Subroutine Eval(Stage,Descr1,Descr2,Value1,Value2,iP)
68 ! Subroutine DaTime18
69 ! Subroutine RunSeconds
70 ! Subroutine PixelDraw = AppF8
71 ! Subroutine nRunSec(nClock,RunSecs,iw)
72 ! Subroutine Jdate20(DaTime)
73
74 05/24/2025 06:46 PM 5,831 S3Main-CallYourApps.f95 Group#19
75 ! Subroutine CallYourApps This is the user interface to Sn3D
76 ! Subroutine ImportYourNm1
77
78 05/24/2025 07:55 PM 25,795 S4Callbacks.f95 Group#4
79 !*Subroutine UserView interface to S2ModCallbacks.f95
80 !*Subroutine Keyboard(Key,xCursor,yCursor)
81 !*Subroutine SpecialFunctionKeys(Key,xCursor,yCursor)
82 !*Subroutine MouseButtons(Button,State,iX,iY)
83 !*Subroutine MouseMotion(iX,iY)
84 ! Subroutine MouseRecUpdate(md)
85 != directly called by the S2 OpenGL callback subroutine passthroughs.
86
87 05/24/2025 07:46 PM 43,334 S5Screen.f95 Group#5
88 ! Subroutine PrntOrtho(nRow,mColumn,iColorFG,iColorBg,PText)
89 ! Subroutine PrintableIchar(iCharIn,iCharOut)
90 ! Subroutine Seeh4d(Vin,nRowIn,nColIn,iColor,Label,iP)
91 ! Subroutine Seeh44d(Hin,nRowIn,nColIn,iColor,Label,iP)
92 ! Subroutine Teapot
93 ! Subroutine Colors3D(nCol)
94 ! Subroutine ScreenSelfie
95 ! Subroutine ShowProjectAndModel(nRowIn,nColIn,iColor,Label20)
96 ! Subroutine HfsToHgl(Hfs,Hgl)
97 ! Subroutine HglToHfs(Hgl,Hfs)
98 ! Subroutine GLv16toHgl(GLv,Hgl)
99 ! Subroutine BbFog
100
101 05/24/2025 07:46 PM 24,940 S6View8.f95 Group#6
102 ! Subroutine View Homogeneous-transform-intensive 3D
103 ! Subroutine ViewGeom(iP)
104 ! Subroutine UnPackCv(Cv,D,E,N,F,L,R,T,B,Mx,Bx,My,By,Mz,Bz)
105 ! Subroutine UnPackDv(Dv,N2,F2,L2,R2,T2,B2,Mi,Bi,Mh,Bh,Mv,Bv)
106
107 05/24/2025 07:46 PM 47,428 S7Motion7.f95 Group#7
108 ! Subroutine Motion7(nM7,iEye,iP) Managing 7 degree-of-freedom ops
109 ! Subroutine hPoIGen(hPoI,XyzRpyM,Mode,iP) & mouse magic
110 ! Subroutine hPoIDecode(hPoI,PoI7,iP)
111 ! Subroutine hFS7Gen(hFS7,XyzRpyM,iP)
112 ! Subroutine hFS7Decode(hFS7,FS7,iP)
113 ! Subroutine DCfromRPY(DC,RPY,iP)
114 ! Subroutine OddEven7DoF(ioe,ioein,ioeu,DoFsInUse,iP)
115 ! Subroutine PackM7u
116 ! Subroutine UnPackM7u
117 ! Subroutine CubeGrid(nCol)
118 ! Subroutine WirePlane(Sizeu,nCol)
119 ! Subroutine VecFont7(XYZRPYWC,Linewidth,iCol,Label)
120 --Quaternions:
121 ! Subroutine QFromRpy(Q,Rpyh)
122 ! Subroutine QoutFromQoQi(Qout,Qo,Qi)
123 ! Subroutine QtoRpy(Q,Rpy)
124 ! Subroutine QToQinverse(Q,Qinverse)
125 ! Subroutine QtoWhatAngle(Q,WhatAngle,iP) <="toQuaternions"

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125 ! Subroutine QConvrtAngle(Q,vnAt,Angle,iP)  <- Jettitions
126
127 05/24/2025  07:45 PM                19,632 S8Help.f95                Group#8
128 ! Subroutine Boilerplate(iDetails)
129 ! Subroutine TextToScreen(HelpFileIn,nRowIn,nColIn,iColor,iP)
130 05/24/2025  08:29 PM                8,550 S8Help.txt  <-which is shown here.
131
132 05/24/2025  07:49 PM                39,542 S9Font.f95                Group#9
133 ! Module CharDef
134 ! ~an English character vector font, & more.
135 ! End Module CharDef
136 ! Subroutine AlphaJS(cLabelL,PosLLCq,RpyDq,SizeHq,iCol,fLinewidth,iP)
137 ! Subroutine Model7DoF(Xyzh,Rpyh,S,Model7h,iP)
138 !-----
139 !-- Auxiliary subroutines - Basic real(8) homog. vector math
140 05/24/2025  07:50 PM                9,550 Sa-Mathh8Mod.f95
141 !Module hVecMath8Mod
142 ! contains
143 ! Subroutine hAdd(Vouth,V1h,V2h)
144 ! Subroutine hSubtract(Vouth,V1h,V2h)
145 ! Subroutine hCross(Vouth,V1h,V2h)
146 ! Subroutine hDot(V1h,V2h,DotP)
147 ! Subroutine hVnorm(Vinh,Vouth,Vmag)
148 ! Subroutine hPointPolar(Ph,aRpyh,PDmag)
149 !End Module hVecMath8Mod
150
151 !-- Auxiliary subroutines - Draws glistening tube-lines
152 05/24/2025  07:51 PM                20,589 Sa-TubesMod.f95
153 !Module TubeDef
154 ! type,public::TubeRec:Tu(:),TuIn,TuZero
155 ! type,public::LightMaterialRec ;sequence
156 ! contains
157 ! Subroutine Lighting(iOffOn)
158 ! Subroutine LightShow
159 ! Subroutine Material
160 ! Subroutine Tubes(iDone,nPoint,pXyzh,Radius,iP)
161 ! Subroutine Sphere(SphRad,pXyz)
162 !End Module TubeDef
163
164
165 !-- Application#1 - S11AppF1: Application Stub                +10 = Group#11
166 05/24/2025  06:40 PM                11,721 S0-AppF1-stub.f95
167 ! Subroutine S11AppF1
168
169 *** Dodecahedron Visualization ***
170 !-- Application#2 - S12AppF2: Dodecahedron Visualization    +10 = Group#12
171 05/24/2025  06:39 PM                14,028 S0-AppF2-Dodec.f95
172 !Subroutine S12AppF2
173 !Subroutine PLabelView(A3,P3L,iCol,widthOfLine)
174
175 05/24/2025  08:29 PM                47,585 SA2-hVecMath16Mod.f95
176 !Module hVecMath16Mod
177 ! Module DodecIO                <- dodecahedron analysis variables
178 ! contains
179 ! Function Sqrj(Valin) Result(ValSqrout)                2025.04.21.1545
180 !End Module DodecIO
181 !Subroutine DodecModel16(iP)                <- dodecahedron geometry math
182 !Subroutine SinCos16(AngleD,SinAngle,CosAngle)
183 !Subroutine ASinD16(Angle,SineAngle,iP)
184 !Subroutine ACosD16(Angle,CosineAngle,iP)
185 !Subroutine hPointPolar16(Ph,aRpyh,PDmag)
186 !Subroutine hVnorm16(Vinh,Vouth,Vmag)

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187 !Subroutine hVecMirror2D16(Vinh,Vmirrorh,Vouth)
188 !Subroutine hVecMirror3D16(Vinh,Vmirror1h,Vmirror2h,Vouth)
189 !Subroutine hCross16(Voh,Vi1h,Vi2h)
190 !Subroutine Sqrt16(ValIn,ValSqrOut,iP)
191
192 |-- Application#8 - AppF8: Colors Visualization +10 = Group#18
193     located in : S3Main.f95 @L694: Subroutine "PixelDraw"
194 !-----
195
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