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In[*]:= << AceGen`

(* Triangle 2D 3 nodes 2 displacements per node, Total Lagrangian *)
SMSInitialize["m1s3dstainssecond",
  "Language" → "Fortran90", "Mode" → "Optimal", "VectorLength" → 50 000]
SMSModule["m1s3dstainssecond", Real[mu$$, lambda$$, c2$$,
  c3$$, c5$$, c11$$, c15$$, nl$$[3], nl2$$[3, 3], f$$[3, 3], f2$$[3, 3, 3],
  green$$[3, 3], green2$$[3, 3, 3], s$$[3, 3], sigma$$[3, 3, 3], nucleus$$[3]]];
mu = SMSReal[mu$$];
lambda = SMSReal[lambda$$];
c2 = SMSReal[c2$$];
c3 = SMSReal[c3$$];
c5 = SMSReal[c5$$];
c11 = SMSReal[c11$$];
c15 = SMSReal[c15$$];
nl = SMSReal[Array[nl$$, {3}]];
nl2 = SMSReal[Array[nl2$$, {3, 3}]];
green = SMSReal[Array[green$$, {3, 3}]];
green2 = SMSReal[Array[green2$$, {3, 3, 3}]];
f = SMSReal[Array[f$$, {3, 3}]];
f2 = SMSReal[Array[f2$$, {3, 3, 3}]];
s = SMSReal[Array[s$$, {3, 3}]];
sigma = SMSReal[Array[sigma$$, {3, 3, 3}]];
nucleus = SMSReal[Array[nucleus$$, {3}]];
delta = {{1, 0, 0}, {0, 1, 0}, {0, 0, 1}};
(* Fourth order tensor *)
cc = Table[0, {i, 3}, {j, 3}, {k, 3}, {l, 3}];
Do[cc[[i, j, k, l]] = lambda*delta[[i, j]]*delta[[k, l]] +
  mu*(delta[[i, k]]*delta[[j, l]] + delta[[i, l]]*delta[[j, k]]), {i, 3}, {j, 3}, {k, 3}, {l, 3}];
Do[s[[i, j]] = 0, {i, 3}, {j, 3}];
Do[s[[i, j]] = s[[i, j]] + cc[[i, j, k, l]]*green[[k, l]], {i, 3}, {j, 3}, {k, 3}, {l, 3}];
(* Sixth order tensor *)
ctang = Table[0, {i, 3}, {j, 3}, {k, 3}, {l, 3}, {p, 3}, {q, 3}];
Do[ctang[[i, j, k, l, p, q]] = ctang[[i, j, k, l, p, q]] +
  c2*(delta[[i, j]]*delta[[k, l]]*delta[[p, q]] + delta[[i, j]]*delta[[k, p]]*delta[[l, q]] +
    delta[[i, k]]*delta[[j, q]]*delta[[l, p]] + delta[[i, q]]*delta[[j, k]]*delta[[l, p]]) +
  c3*delta[[i, j]]*delta[[k, q]]*delta[[l, p]] +
  c5*(delta[[i, k]]*delta[[j, l]]*delta[[p, q]] + delta[[i, k]]*delta[[j, p]]*delta[[l, q]] +
    delta[[i, l]]*delta[[j, k]]*delta[[p, q]] + delta[[i, p]]*delta[[j, k]]*delta[[l, q]]) +
  c11*(delta[[i, p]]*delta[[j, l]]*delta[[k, q]] + delta[[l, i]]*delta[[p, j]]*delta[[k, q]]) +
  c15*(delta[[i, l]]*delta[[j, q]]*delta[[k, p]] + delta[[i, p]]*delta[[j, q]]*delta[[k, l]] +
    delta[[i, q]]*delta[[j, l]]*delta[[k, p]] + delta[[i, q]]*delta[[j, p]]*delta[[k, l]]),
  {i, 3}, {j, 3}, {k, 3}, {l, 3}, {p, 3}, {q, 3}];

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Do[sigma[[i, j, k]] = 0, {i, 3}, {j, 3}, {k, 3}];
Do[sigma[[i, j, k]] = sigma[[i, j, k]] + ctang[[i, j, k, l, m, n]] * green2[[l, m, n],
  {i, 3}, {j, 3}, {k, 3}, {l, 3}, {m, 3}, {n, 3}];
Do[nucleus[[m]] = 0, {m, 3}];
Do[nucleus[[m]] = nucleus[[m]] + (1/2) * s[[i, j]] * (nl[[i]] * f[[m, j]] + nl[[j]] * f[[m, i]]),
  {m, 3}, {i, 3}, {j, 3}];
Do[nucleus[[m]] = nucleus[[m]] + (1/2) * sigma[[i, j, n]] * (nl2[[i, n]] * f[[m, j]] + nl2[[j, n]] * f[[m, i]] +
  nl[[j]] * f2[[m, i, n]] + nl[[i]] * f2[[m, j, n]]), {m, 3}, {n, 3}, {i, 3}, {j, 3}];
SMSEExport[s, s$$];
SMSEExport[sigma, sigma$$];
SMSEExport[nucleus, nucleus$$];
SMSWrite[];

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Out[]=

True

File:	mls3dstrainssecond.f90 Size: 8453	
Methods	No. Formulae	No. Leafs
mls3dstrainssecond	140	3894