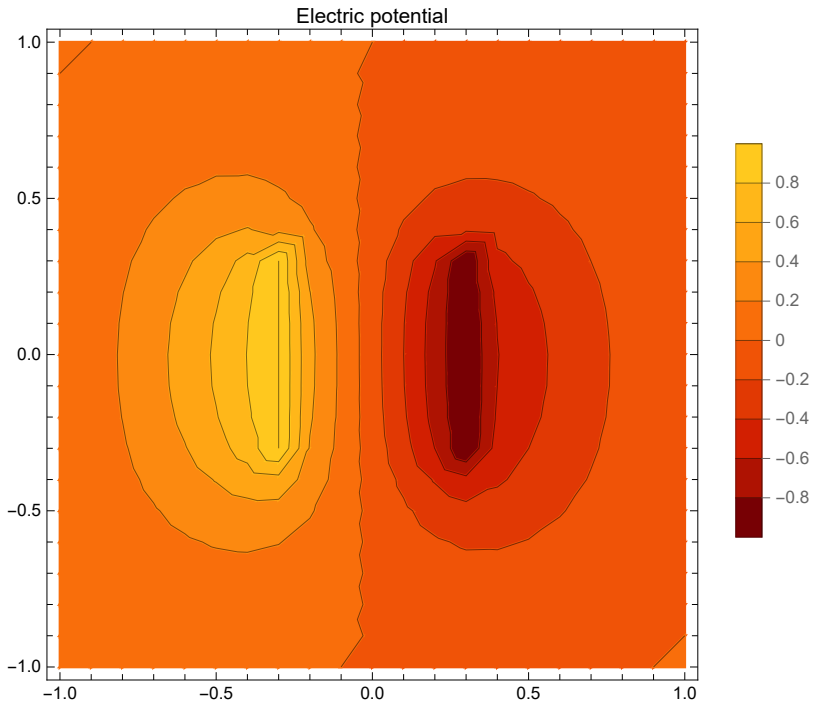
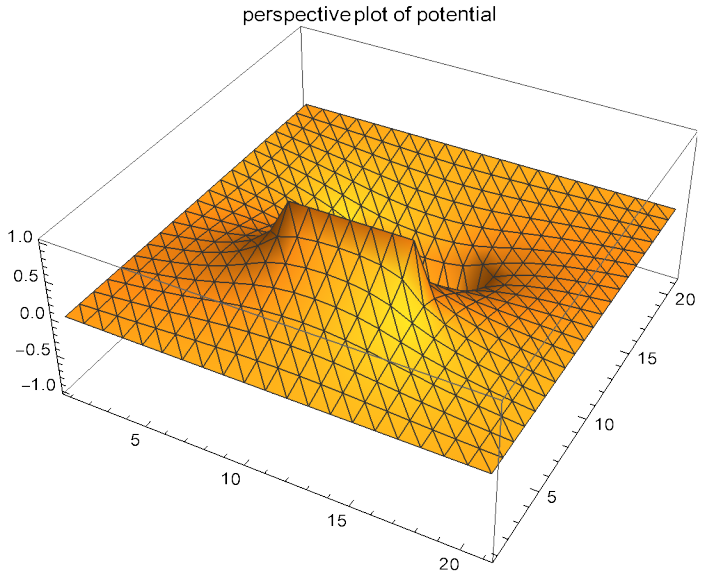
In[ ]:=
```
dx = 0.1;
xL = Range[-1, 1, dx];
lx = Length[Range[-1, 1, dx]];
v = Table[0, {i, lx}, {j, lx}];
v[[1]] = 0 * xL;
v[[lx]] = 0 * xL;
v[[All, 1]] = 0;
v[[All, -1]] = 0;
Do[v[[m, n]] = 1, {m, 8, 14}, {n, 8, 14}];
tol = 0.00000001;
cond = 0;
vo = v;
counter = 0;
While[cond == 0, Do[
   Do[v[[i, j]] =
     0.25 (v[[i + 1, j]] + v[[i - 1, j]] + v[[i, j + 1]] + v[[i, j - 1]]), {i, 2, lx - 1}]
   , {j, 2, lx - 1}];
  Do[v[[m, 8]] = 1, {m, 8, lx - 7}]; Do[v[[m, 14]] = -1, {m, 8, lx - 7}];
  dv = Abs[v - vo];
  If[Max[dv] < tol, cond = 1]; vo = v; counter++];
counter
p1 = ListContourPlot[v, DataRange → {{-1, 1}, {-1, 1}}, ColorFunction → "SolarColors",
  PlotLegends → Automatic, PlotLabel → "Electric potential"]
potential = {};
Do[Do[ AppendTo[potential, {i, j, v[[i, j]]}], {i, 1, lx}], {j, 1, lx}]
ListPlot3D[potential, Mesh → All, PlotLabel → "perspective plot of potential"]

Ex = Table[0, {i, lx}, {j, lx}];
Do[Do[Ex[[i, j]] = -(v[[i + 1, j]] - v[[i - 1, j]]) / (2 * dx), {i, 2, lx - 1}], {j, 2, lx - 1}]
Ey = Table[0, {i, lx}, {j, lx}];
Do[Do[Ey[[i, j]] = -(v[[i, j + 1]] - v[[i, j - 1]]) / (2 * dx), {i, 2, lx - 1}], {j, 2, lx - 1}]
ListVectorPlot[Table[{Ey[[i, j]], Ex[[i, j]]}, {i, 1, lx, 1}, {j, 1, lx, 1}],
 DataRange → {{-1, 1}, {-1, 1}}, PlotLabel → "Electric Field"]
```

Out[ ]= 215

Out[•]=


Electric potential
1.0
0.5
0.0
−0.5
−1.0
−1.0
−0.5
0.0
0.5
1.0
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8

Out[•]=


perspective plot of potential
1.0
0.5
0.0
−0.5
−1.0
5
10
15
20
5
10
15
20

Out[ ]=