

```

FOR d3= 0

DH parameters of 3dof arm
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963  1.57079633  0.          0.          ]
 [ 0.          0.          0.          14.12       ]]

homologous transformation matrix of 3dof arm
[[-2.38829539e-01  9.20504853e-01  3.09243053e-01  4.36651192e+00]
 [-5.62647134e-01 -3.90731128e-01  7.28530979e-01  1.02868574e+01]
 [ 7.91447189e-01  2.38048343e-17  6.11237553e-01  9.63067425e+00]
 [ 0.00000000e+00  0.00000000e+00  0.00000000e+00  1.00000000e+00]]

X COORDINATE OF END EFFECTOR 4.36651192
Y COORDINATE OF END EFFECTOR 10.28685743
Z COORDINATE OF END EFFECTOR 9.63067425


FOR d3= 1

DH parameters of 3dof arm
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963  1.57079633  0.          0.          ]
 [ 0.          0.          0.          15.12       ]]

homologous transformation matrix of 3dof arm
[[-2.38829539e-01  9.20504853e-01  3.09243053e-01  4.67575497e+00]
 [-5.62647134e-01 -3.90731128e-01  7.28530979e-01  1.10153884e+01]
 [ 7.91447189e-01  2.38048343e-17  6.11237553e-01  1.02419118e+01]
 [ 0.00000000e+00  0.00000000e+00  0.00000000e+00  1.00000000e+00]]

X COORDINATE OF END EFFECTOR 4.67575497
Y COORDINATE OF END EFFECTOR 11.0153884
Z COORDINATE OF END EFFECTOR 10.2419118


FOR d3= 2

DH parameters of 3dof arm
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963  1.57079633  0.          0.          ]
 [ 0.          0.          0.          16.12       ]]

homologous transformation matrix of 3dof arm
[[-2.38829539e-01  9.20504853e-01  3.09243053e-01  4.98499802e+00]
 [-5.62647134e-01 -3.90731128e-01  7.28530979e-01  1.17439194e+01]
 [ 7.91447189e-01  2.38048343e-17  6.11237553e-01  1.08531494e+01]
 [ 0.00000000e+00  0.00000000e+00  0.00000000e+00  1.00000000e+00]]

X COORDINATE OF END EFFECTOR 4.98499802
Y COORDINATE OF END EFFECTOR 11.74391938
Z COORDINATE OF END EFFECTOR 10.85314936

```

FOR d3= 3

DH parameters of 3dof arm

```
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963  1.57079633  0.          0.          ]
 [ 0.          0.          0.          17.12       ]]
```

homologous transformation matrix of 3dof arm

```
[[-2.38829539e-01  9.20504853e-01  3.09243053e-01  5.29424108e+00]
 [-5.62647134e-01 -3.90731128e-01  7.28530979e-01  1.24724504e+01]
 [ 7.91447189e-01  2.38048343e-17  6.11237553e-01  1.14643869e+01]
 [ 0.00000000e+00  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

X COORDINATE OF END EFFECTOR 5.29424108  
Y COORDINATE OF END EFFECTOR 12.47245036  
Z COORDINATE OF END EFFECTOR 11.46438691

FOR d3= 4

DH parameters of 3dof arm

```
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963  1.57079633  0.          0.          ]
 [ 0.          0.          0.          18.12       ]]
```

homologous transformation matrix of 3dof arm

```
[[-2.38829539e-01  9.20504853e-01  3.09243053e-01  5.60348413e+00]
 [-5.62647134e-01 -3.90731128e-01  7.28530979e-01  1.32009813e+01]
 [ 7.91447189e-01  2.38048343e-17  6.11237553e-01  1.20756245e+01]
 [ 0.00000000e+00  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

X COORDINATE OF END EFFECTOR 5.60348413  
Y COORDINATE OF END EFFECTOR 13.20098134  
Z COORDINATE OF END EFFECTOR 12.07562446

FOR d3= 5

DH parameters of 3dof arm

```
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963  1.57079633  0.          0.          ]
 [ 0.          0.          0.          19.12       ]]
```

homologous transformation matrix of 3dof arm

```
[[-2.38829539e-01  9.20504853e-01  3.09243053e-01  5.91272718e+00]
 [-5.62647134e-01 -3.90731128e-01  7.28530979e-01  1.39295123e+01]
 [ 7.91447189e-01  2.38048343e-17  6.11237553e-01  1.26868620e+01]
 [ 0.00000000e+00  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

X COORDINATE OF END EFFECTOR 5.91272718  
Y COORDINATE OF END EFFECTOR 13.92951232  
Z COORDINATE OF END EFFECTOR 12.68686201