**Test Cases**

# **Introduction**

## **Purpose**

This document documents test procedures and results for Unified Code Count Tool (UCC) Matlab language support. Requirements, installation procedures and usage instructions are documented in UCC User Manual and Release Notes.

## **References**

## **Definitions, Acronyms and Abbreviations**

# **Test Cases**

## **Test Case <3DVisualization\_1>**

### ***Test Objectives***

This test case tests the keywords in matlab that come under the sub-category of Surface and Mesh Creation, Domain Generation and Color operations (3D visualization keywords)

### ***Test Description***

*Execute UCC with the input Matlab code file as followed*

-dir <source files directory> UCC\_Matlab\_3DVisu\_Keywords\_Test1.m

*Verify UCC output file according to the Pass/Fail criteria.*

### ***Pre-conditions***

*a) The UCC executables is accessible.*

*b) Test directories must be writable*

*c) Matlab source file is accessible.*

### ***Post-conditions***

1. *UCC complete execution without error.*
2. *Output files, MATLAB\_outfile.csv and outfile\_cplx.csv, are created.*

### ***Dependencies***

*See the Pre-condition for any dependencies.*

### ***Assumptions and Constraints***

*None.*

### ***Input Specifications***

*Matlab code file: UCC\_Matlab\_3DVisualization\_Keywords\_Test1.m*

|  |
| --- |
| %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  TEST CASE ID: 3DVisualization\_1  TEST CASE DESCRIPTION :  This test case has the surface and mesh creation, Domain Generation and Color operations keywords from the matlab - 3D visualization keywords  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  hidden on  hidden off  hidden  mesh(X,Y,Z)  meshc(X,Y,Z);  meshz(X,Y,Z)  Z = peaks;  Z = peaks(n);  Z = peaks(V);  Z = peaks(X,Y);  surfc(X,Y,Z)  surf(x,y,z,c);  surface(peaks,flipud(X),...  'FaceColor','texturemap',...  'EdgeColor','none',...  'CDataMapping','direct')  surfl(peaks)  tetramesh(Tes,X);  trimesh(tri,x,y,z)  triplot(dt)  trisurf(tri,x,y,z)  beta = .5;  brighten(beta);  caxis([-1 0])  colorbar('location','southoutside')  h = colordef('new',color\_option)  colormap(hsv(128))  colormapeditor  whitebg('g')  whitebg('green')  whitebg([0 1 0]);  set(gcf,'Color',[1,0.4,0.6])  cmap = contrast(X);  graymon  M = hsv2rgb(H)  cmap = rgb2hsv(M)  rgbplot(copper)  shading flat  spinmap(t)  surfnorm(x,y,z)  whitebg([0 .5 .6]) |

### ***Expected Output Specifications***

*File MATLAB\_outfile.csv should contain the following information*

*a) Total Physical SLOC is xxx*

*b) Total Logical SLOC is xxx*

*File outfile\_cplx.csv should contain the following information*

*a) Only 1 Matlab source file is processed and file name is the correction input file according to the input specification.*

*b) The following table gives the expected count of keywords.*

|  |  |
| --- | --- |
| **KEYWORD** | **COUNT** |
| hidden | 3 |
| peaks | 4 |
| Others | 1 |

### ***Pass/Fail Criteria***

*If the results match those of the Expected Output Specification, the test has passed.* Otherwise the test has failed.

### ***Test Results***

*[Insert test result – test will be rerun before final delivery]*

# **Test Cases**

## **Test Case <3DVisualization\_2>**

### ***Test Objectives***

This test case tests the keywords in matlab that come under the sub-category of Camera view point, Aspect ratio & Axis limits,Object Manipulation and Region of interest (3D visualization keywords)

### ***Test Description***

*Execute UCC with the input Matlab code file as followed*

-dir <source files directory> UCC\_Matlab\_3DVisu\_Keywords\_Test2.m

*Verify UCC output file according to the Pass/Fail criteria.*

### ***Pre-conditions***

*a) The UCC executables is accessible.*

*b) Test directories must be writable*

*c) Matlab source file is accessible.*

### ***Post-conditions***

1. *UCC complete execution without error.*
2. *Output files, MATLAB\_outfile.csv and outfile\_cplx.csv, are created.*

### ***Dependencies***

*See the Pre-condition for any dependencies.*

### ***Assumptions and Constraints***

*None.*

### ***Input Specifications***

*Matlab code file: UCC\_Matlab\_3DVisualization\_Keywords\_Test2.m*

|  |
| --- |
| %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  TEST CASE ID: 3DVisualization\_2  TEST CASE DESCRIPTION :  This test case has the Camera view point, Aspect ratio & Axis limits,Object Manipulation and Region of interest keywords from the matlab - 3D visualization keywords  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  %Camera Viewpoint keywords    camdolly(dx(i),dy(i),0)  mode = cameratoolbar('GetMode')  camlookat(gca)  camorbit(10,0,'data',[0 1 0])  campan(dtheta,dphi,'coordsys','direction')  campos([x,5,10])  camproj('orthographic')  camroll(10)  camtarget([xt(i),30,0])  camup([1 0 0]);  camva(camva)  camzoom(zoom\_factor)  m = makehgtform('xrotate',pi/2)\*makehgtform('yrotate',pi/2);  view(az, el);  T = viewmtx(az,el,phi)    %Aspect Ratio and Axis Limits keywords    daspect([1 1 1])  pbaspect([1 1 1])  xlim([-1.75 3.25])  ylim([-1.75 3.25])  zlim([-1.75 3.25])    %Object Manipulation  h = pan;  reset(gca)  rotate(h12,zdir,25)  h = rotate3d;  A = selectmoveresize  h = zoom;    %Region of Interest    [r2] = dragrect(rect)  finalRect = rbbox; |

### ***Expected Output Specifications***

*File MATLAB\_outfile.csv should contain the following information*

*a) Total Physical SLOC is xxx*

*b) Total Logical SLOC is xxx*

*File outfile\_cplx.csv should contain the following information*

*a) Only 1 Matlab source file is processed and file name is the correction input file according to the input specification.*

*b) The following table gives the expected count of keywords.*

|  |  |
| --- | --- |
| **KEYWORD** | **COUNT** |
| reset | 2 |
| Others | 1 |

### ***Pass/Fail Criteria***

*If the results match those of the Expected Output Specification, the test has passed.* Otherwise the test has failed.

### ***Test Results***

*[Insert test result – test will be rerun before final delivery]*

# **Test Cases**

## **Test Case <3DVisualization\_3>**

### ***Test Objectives***

This test case tests the keywords in matlab that come under the sub-category of lighting, Transparency and volume visualization (3D visualization keywords)

### ***Test Description***

*Execute UCC with the input Matlab code file as followed*

-dir <source files directory> UCC\_Matlab\_3DVisu\_Keywords\_Test3.m

*Verify UCC output file according to the Pass/Fail criteria.*

### ***Pre-conditions***

*a) The UCC executables is accessible.*

*b) Test directories must be writable*

*c) Matlab source file is accessible.*

### ***Post-conditions***

1. *UCC complete execution without error.*
2. *Output files, MATLAB\_outfile.csv and outfile\_cplx.csv, are created.*

### ***Dependencies***

*See the Pre-condition for any dependencies.*

### ***Assumptions and Constraints***

*None.*

### ***Input Specifications***

*Matlab code file: UCC\_Matlab\_3DVisualization\_Keywords\_Test3.m*

|  |
| --- |
| %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  %TEST CASE ID: 3DVisualization\_3    %TEST CASE DESCRIPTION :    %This test case has the lighting, Transparency and volume visualization keywords from the matlab - 3D visualization keywords  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  %lighting    camlight(h,'left')  R = diffuse(Nx,Ny,Nz,S)  light('Position',[1 0 0],'Style','infinite');  lightangle(h,az,30)  lighting none  material([ka kd ks])  R = specular(Nx,Ny,Nz,S,V)  light('Position',[1 0 0],'Style','infinite');  %Transparency  alim([0 .15])  alpha(0.5);  alphamap('vup')    %Volume Visualization    hcones = coneplot(x,y,z,u,v,w,cx,cy,cz,5);  h = contourslice(x,y,z,v,[1:9],[],[0],linspace(-8,2,10));  cav = curl(x,y,z,u,v,w);  div = divergence(x,y,z,u,v,w);  v = flow  iverts = interpstreamspeed(x,y,z,u,v,w,verts,.2);  p1 = patch(isosurface(D, 5),'FaceColor','red','EdgeColor','none');  isocolors(x,y,z,cdata,p);  isonormals(x,y,z,data,p);  p = patch(isosurface(x,y,z,v,-3));  reducepatch(p2,0.15)  [x,y,z,D] = reducevolume(D,[4,4,1]);  p2 = patch(shrinkfaces(fv,.3));  slice(x,y,z,v,xslice,yslice,zslice)  data = smooth3(data,'box',5);  streamline(stream2(x(:,:,5),y(:,:,5),u(:,:,5),v(:,:,5),sx,sy));  streamline(stream3(x,y,z,u,v,w,sx,sy,sz))  streamparticles(iverts,35,'animate',10,'ParticleAlignment','on')  streamribbon(x,y,z,u,v,w,sx,sy,sz);  streamslice(x,y,z,u,v,w,[],[],[5])  streamtube(x,y,z,u,v,w,sx,sy,sz);  [x,y,z,D] = subvolume(D,[60,80,nan,80,nan,nan]);  patch(surf2patch(s))  axis(volumebounds(x,y,z,v)) |

### ***Expected Output Specifications***

*File MATLAB\_outfile.csv should contain the following information*

*a) Total Physical SLOC is xxx*

*b) Total Logical SLOC is xxx*

*File outfile\_cplx.csv should contain the following information*

*a) Only 1 Matlab source file is processed and file name is the correction input file according to the input specification.*

*b) The following table gives the expected count of keywords.*

|  |  |
| --- | --- |
| **KEYWORD** | **COUNT** |
| light | 2 |
| streamline | 2 |
| Others | 1 |

### ***Pass/Fail Criteria***

*If the results match those of the Expected Output Specification, the test has passed.* Otherwise the test has failed.

### ***Test Results***

*[Insert test result – test will be rerun before final delivery]*

# **Test Cases**

## **Test Case <3DVisualization\_4>**

### ***Test Objectives***

This test case tests the occurrences of few of the 3D visualization keywords in a matlab program.

### ***Test Description***

*Execute UCC with the input Matlab code file as followed*

-dir <source files directory> UCC\_Matlab\_3DVisu\_Keywords\_Test4.m

*Verify UCC output file according to the Pass/Fail criteria.*

### ***Pre-conditions***

*a) The UCC executables is accessible.*

*b) Test directories must be writable*

*c) Matlab source file is accessible.*

### ***Post-conditions***

1. *UCC complete execution without error.*
2. *Output files, MATLAB\_outfile.csv and outfile\_cplx.csv, are created.*

### ***Dependencies***

*See the Pre-condition for any dependencies.*

### ***Assumptions and Constraints***

*None.*

### ***Input Specifications***

*Matlab code file: UCC\_Matlab\_3DVisualization\_Keywords\_Test4.m*

|  |
| --- |
| %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  %TEST CASE ID: 3DVisualization\_4    %TEST CASE DESCRIPTION :    %This test case tests the occurrences of few of the 3D visualization keywords in a matlab program.  %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%  %prepare your data  Z = peaks(20);  %select window and position plot region within window  figure(1)subplot(2,1,2)  %call 3-D graphing function  h = surf(Z);  %Add lighting  light('Position',[-2,2,20])  lighting phong  material([0.4,0.6,0.5,30])  set(h,'FaceColor',[0.7 0.7 0],'BackFaceLighting','lit')  %Add viewpoint  view([30,25])  set(gca,'CameraViewAngleMode','Manual')  %set axis limits and tick marks  axis([5 15 5 15 -8 8])  set(gca,'ZTickLabel','Negative||Positive')  %set aspect ratio  set(gca,'PlotBoxAspectRatio',[2.5 2.5 1])  %Annotate the graph with axis labels, legend and text  xlabel('X Axis')  ylabel('Y Axis')  zlabel('Function Value')  title('Peaks')  %print graph  set(gcf,'PaperPositionMode','auto')  print -dps2 |

### ***Expected Output Specifications***

*File MATLAB\_outfile.csv should contain the following information*

*a) Total Physical SLOC is xxx*

*b) Total Logical SLOC is xxx*

*File outfile\_cplx.csv should contain the following information*

*a) Only 1 Matlab source file is processed and file name is the correction input file according to the input specification.*

*b) The following table gives the expected count of keywords.*

|  |  |
| --- | --- |
| **KEYWORD** | **COUNT** |
| Peaks, subplot, surf,light,lighting,material,view, viewpoint,axis,xlabel,ylabel,zlabel,title,  print | 1 |
| set | 5 |

### ***Pass/Fail Criteria***

*If the results match those of the Expected Output Specification, the test has passed.* Otherwise the test has failed.

### ***Test Results***

*[Insert test result – test will be rerun before final delivery]*

# **Appendix A – Authors List**

*[The following table shows authors and their corresponding test cases]*

|  |  |  |  |
| --- | --- | --- | --- |
| **Author Name** | **Contact Email** | **Test Case ID** | **Notes** |
| Sriranjani Babu | [sriranjb@usc.edu](mailto:sriranjb@usc.edu) | 3DVisualization\_1 | Test case and Test case document preparation |
| Sriranjani Babu | [sriranjb@usc.edu](mailto:sriranjb@usc.edu) | 3DVisualization\_2 | Test case and Test case document preparation |
| Sriranjani Babu | [sriranjb@usc.edu](mailto:sriranjb@usc.edu) | 3DVisualization\_3 | Test case and Test case document preparation |
| Sriranjani Babu | [sriranjb@usc.edu](mailto:sriranjb@usc.edu) | 3DVisualization\_4 | Test case and Test case document preparation |
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