**4.2 OpenGL Functions:**

This Project is implemented by using the below OpenGL Functions[4].

**Window Management functions**

Five routines perform tasks necessary to initialize a window.

* **glutInit**(int \**argc*, char \*\**argv*)

Initializes GLUT. The arguments from main are passed in ca be used by the application

* **glutInitDisplayMode**(unsigned int *mode*)

Requests a display with the properties in mode. The value of mode is determined by the logical OR

* **glutInitWindowPosition**(int *x*, int *y*)

Specifies the screen location for the upper-left corner of your window.

* **glutInitWindowSize**(int *width*, int *size*)

Specifies the size, in pixels, of your window.

* int **glutCreateWindow**(char \**string*)

Creates a window on display. The string title can be used to label the window.

* **Void glutMainLoop()**

Cause the program to enter an event processing loop.

**Transformation Functions**

* **void glRotatef( GLfloat angle, GLfloat x, GLfloat y, GLfloat z);**

The glRotated and glRotatef functions multiply the current matrix by a rotation matrix.

* **void glTranslate( TYPE x, TYPE y, TYPEz);**

The glTranslated and glTranslatef functions multiply the current matrix by a translation matrix.

**Call Back Functions**

* **glutDisplayFunc(void (\* *func*)(void))**

Whenever GLUT determines the contents of the window need to be redisplayed, the callback function registered by **glutDisplayFunc()** is executed.

* **glutReshapeFunc**

glutReshapeFunc sets the reshape callback for the current window.

SYNTAX:

void glutReshapeFunc(void (\*func)(int width, int height));

* **void glutIdleFunc(void (\*func)(void));**

glutIdleFunc sets the global idle callback. This function is invoked when there are no other events. Its default is the NULL function pointer .Atypical use of idle function is to continue to generate graphical primitives through a display function while nothing is happening.

**Interactive Functions**

* **void glutKeyboardFunc(void (\*func)(unsigned char key, int x, int y));**

Registers the keyboard callback function func. The callback function returns the ASCII code of the key pressed and the position of the mouse.

* **void glutMouseFunc(void (\*func)(int button, int state, int x, int y));**

Registers the mouse callback function func. The callback function returns the button(GLUT\_LEFT\_BUTTON,GLUT\_RIGHT\_BUTTON,GLUT\_MIDDLE\_BUTTON), the state of the button after the event (GLUT\_UP,GLUT\_DOWN) and the position of the mouse with respect to the top left corner of the window.

* **int glutCreateMenu(void (\*func)(int value));**

Returns an identifier for a top-level menu and registers the callback function f that returns an integer value corresponding to the menu entry selected. glutCreateMenu creates a new pop-up menu and returns a unique small integer identifier.

* **void glutAddMenuEntry(char \*name, int value);**

This function adds an entry with the string name displayed to the current menu. Value is returned to the menu callback when the entry is selected

* **void glutAttachMenu(int button);**

glutAttachMenu attaches a mouse button for the current window to the identifier of the current menu.

* **Void glPushMatrix() & void glPopMatrix**

Push to and pops from the matrix stack corresponding to the current matrix mode.

* **void glOrtho(GLdouble left, GLdouble right, GLdouble top, GLdouble bottom, GLdouble near, GLdouble far)**

Defines an Orthographic viewing volume with all parameters measured from the center of the projection plane.