

My Project

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Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

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Chapter 2

File Index

2.1 File List

Here is a list of all documented files with brief descriptions:

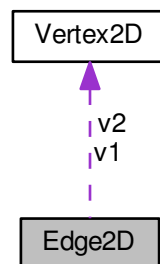
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Chapter 3

Class Documentation

3.1 Edge2D Class Reference

Collaboration diagram for Edge2D:



Public Attributes

- [Vertex2D v1](#)
- [Vertex2D v2](#)

3.1.1 Detailed Description

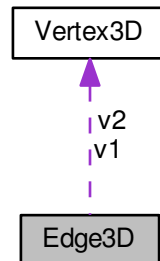
This class defines an edge of a 2D object which contains two 2D vertices of the edge.

The documentation for this class was generated from the following files:

- `cad_v1_0.cpp`
- [generate2D_v2.0.cpp](#)

3.2 Edge3D Class Reference

Collaboration diagram for Edge3D:



Public Attributes

- [Vertex3D](#) `v1`
- [Vertex3D](#) `v2`

3.2.1 Detailed Description

This class defines an edge of a 3D object which contains two 3D vertices of the edge.

The documentation for this class was generated from the following files:

- `cad_v1_0.cpp`
- [generate2D_v2.0.cpp](#)

3.3 Model2D Class Reference

Public Member Functions

- `int edge1Length ()`
- `int vertex1Length ()`
- `int edge2Length ()`
- `int vertex2Length ()`
- `int edge3Length ()`
- `int vertex3Length ()`
- `int edge1Length ()`
- `int vertex1Length ()`
- `int edge2Length ()`
- `int vertex2Length ()`
- `int edge3Length ()`
- `int vertex3Length ()`

Public Attributes

- vector< [Vertex2D](#) > [vertexVector1](#)
vector of vertices in the model
- vector< [Vertex2D](#) > **vertexVector2**
- vector< [Vertex2D](#) > **vertexVector3**
- vector< [Edge2D](#) > [edgesVector1](#)
vector of edges in the model
- vector< [Edge2D](#) > **edgesVector2**
- vector< [Edge2D](#) > **edgesVector3**

3.3.1 Detailed Description

This class defines a model of a 2D object.

The documentation for this class was generated from the following files:

- [cad_v1_0.cpp](#)
- [generate2D_v2.0.cpp](#)

3.4 Model3D Class Reference

Public Member Functions

- int [addEdge](#) ([Vertex3D](#) v1, [Vertex3D](#) v2, int length)
Method to add edge to the model.
- int **edgeLength** ()
- int **vertexLength** ()
- int [addEdge](#) ([Vertex3D](#) v1, [Vertex3D](#) v2, int length)
Method to add edge to the model.
- int **edgeLength** ()
- int **vertexLength** ()

Public Attributes

- vector< [Vertex3D](#) > [vertexVector](#)
vector of vertices in the model
- vector< [Edge3D](#) > [edgesVector](#)
vector of edges in the model

3.4.1 Detailed Description

This class defines a model of a 3D object.

The documentation for this class was generated from the following files:

- [cad_v1_0.cpp](#)
- [generate2D_v2.0.cpp](#)

3.5 Vertex2D Class Reference

Public Member Functions

- void [vertex2DAddNeighbour](#) ([Vertex2D](#) v)
Method to add neighbouring vertices to the vector.
- void [vertex2DAddNeighbour](#) ([Vertex2D](#) v)
Method to add neighbouring vertices to the vector.

Public Attributes

- float **x**
- float **y**
- string [name](#)
Name of vertex.
- vector< [Vertex2D](#) > [vertex2DEdgeVector](#)
vector of names of vertices which have edge to particular vertex
- double **x**
- double **y**

3.5.1 Detailed Description

This class defines a vertex of a 2D object which contains two coordinates and the vector of edges from that vertex.

The documentation for this class was generated from the following files:

- [cad_v1_0.cpp](#)
- [generate2D_v2.0.cpp](#)

3.6 Vertex3D Class Reference

Public Member Functions

- void [vertex3DAddNeighbour](#) ([Vertex3D](#) v)
Method to add neighbouring vertices to vertex.
- void [vertex3DAddNeighbour](#) ([Vertex3D](#) v)
Method to add neighbouring vertices to vertex.

Public Attributes

- float **x**
3 coordinates of vertex
- float **y**
- float **z**
- string [name](#)
Name of vertex.
- vector< [Vertex3D](#) > [vertex3DEdgeVector](#)
vector of edges
- double **x**
3 coordinates of vertex
- double **y**
- double **z**

3.6.1 Detailed Description

This class defines a vertex of a 3D object which contains three coordinates and the vector of edges from that vertex.

The documentation for this class was generated from the following files:

- `cad_v1_0.cpp`
- [generate2D_v2.0.cpp](#)

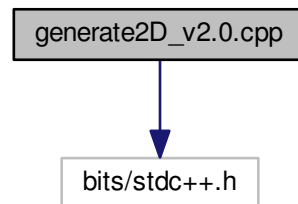
Chapter 4

File Documentation

4.1 generate2D_v2.0.cpp File Reference

```
#include <bits/stdc++.h>
```

Include dependency graph for generate2D_v2.0.cpp:



Classes

- class [Vertex2D](#)
- class [Edge2D](#)
- class [Model2D](#)
- class [Vertex3D](#)
- class [Edge3D](#)
- class [Model3D](#)

Macros

- `#define least 0.0001`

Functions

- void [getRotaionMatrixz](#) (float x, float y, float z, double a[][3])
- void [getRotaionMatrixx](#) (float x, float y, float z, double a[][3])
- void [getRotaionMatrixy](#) (float x, float y, float z, double a[][3])
- [Vertex2D](#) [getProjection](#) ([Vertex3D](#) v, double rotationMatrix[][3], int count)
- [Model2D](#) [rotatedModel3D](#) ([Model3D](#) model, [Model2D](#) outputModel, double rotationMatrix[][3], int count)
- void [graphicalOutput](#) ([Model2D](#) outputModel)
- int [findIndex](#) ([Model2D](#) outputModel, string n)
- bool [sameVertex](#) ([Vertex2D](#) v1, [Vertex2D](#) v2)
- [Model2D](#) [projectedModel](#) ([Model3D](#) model, [Model2D](#) outputModel)
- void [generate2D](#) ([Model3D](#) model, float x, float y, float z)
- vector< string > [tokenizeString](#) (string str)
- [Model3D](#) [createModel3D](#) (ifstream &v1, ifstream &v2, ifstream &e1, ifstream &e2)
- void [getVertex](#) ([Model3D](#) model, ofstream &vertex)
- void [getEdges](#) ([Model3D](#) model, ofstream &edge)
- void [generate3D](#) (ifstream &v1, ifstream &v2, ifstream &e1, ifstream &e2, float x, float y, float z)
- [Model3D](#) [model3DFromInputFiles](#) (ifstream &v, ifstream &e)
- void [interfaceFor3Dto2D](#) ()
- void [interfaceFor2Dto3D](#) ()
- void [interfaceforCAD](#) (int num)
- int [main](#) ()

4.1.1 Function Documentation

4.1.1.1 [Model3D](#) [createModel3D](#) (ifstream & v1, ifstream & v2, ifstream & e1, ifstream & e2)

Create a 3D Model from input .txt files of vertices and edges for 2D file.

4.1.1.2 void [generate2D](#) ([Model3D](#) model, float x, float y, float z)

Function to generate the 2D representation of the vector of edges and vertices parsed as a file along with viewing direction coordinates. Obtains the rotation matrix from the viewing direction coordinates

Generate the rotated 3D model

Obtains the rotation matrix from the viewing direction coordinates

Generate the rotated 3D model

Obtains the rotation matrix from the viewing direction coordinates

Generate the rotated 3D model

Creates a 2D model from rotated 3D Model

Final graphical output in form of files

4.1.1.3 void [generate3D](#) (ifstream & v1, ifstream & v2, ifstream & e1, ifstream & e2, float x, float y, float z)

Function to generate 3D model from given vertex and edges vector of both faces along with viewing direction.
Function to create the 3D model

Reduce the problem to projecting from 3D to 2D views

4.1.1.4 void getEdges (**Model3D** *model*, *ofstream* & *edge*)

Function to get edges from a 3D model in a file.

4.1.1.5 **Vertex2D** getProjection (**Vertex3D** *v*, *double rotationMatrix*[][3], *int count*)

Function to get the projections of each vertex of the model when rotated using the specified rotation matrix.

4.1.1.6 void getRotationMatrixz (*float x*, *float y*, *float z*, *double a*[][3])

Function to obtain the rotation matrix using the viewing direction obtained from the user.

4.1.1.7 void getVertex (**Model3D** *model*, *ofstream* & *vertex*)

Function to get vertices from a 3D model in a file.

4.1.1.8 void graphicalOutput (**Model2D** *outputModel*)

Function to obtain a graphical interface to view the model after applying all transformations.

4.1.1.9 void interfaceFor2Dto3D ()

Function for interface in case of 2D to 3D contains buttons to upload vertex and edge files. Generate button begins processing to display the model.

4.1.1.10 void interfaceFor3Dto2D ()

Function for interface in case of 3D to 2D contains buttons to upload vertex and edge files. Generate button begins processing to display the model.

4.1.1.11 void interfaceforCAD (*int num*)

Function for initial interface showing 2 buttons for 3D to 2D and 2D to 3D conversion.

4.1.1.12 int main ()

Main function initializing buttons for 2D to 3D and 3D to 2D.

4.1.1.13 **Model3D** model3DFromInputFiles (*ifstream* & *v*, *ifstream* & *e*)

Create a 3D Model from input set of files

4.1.1.14 Model2D projectedModel (Model3D *model*, Model2D *outputModel*)

Function to get 2D model from the 3D Model after removing one of the coordinates in each of the view.

4.1.1.15 Model2D rotatedModel3D (Model3D *model*, Model2D *outputModel*, double *rotationMatrix*[[3], int *count*)

Function to output the complete transformed model

4.1.1.16 vector<string> tokenizeString (string *str*)

Function to create a 3D model using the vertices and edges vector of both the 2D faces and store it in the model object.

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