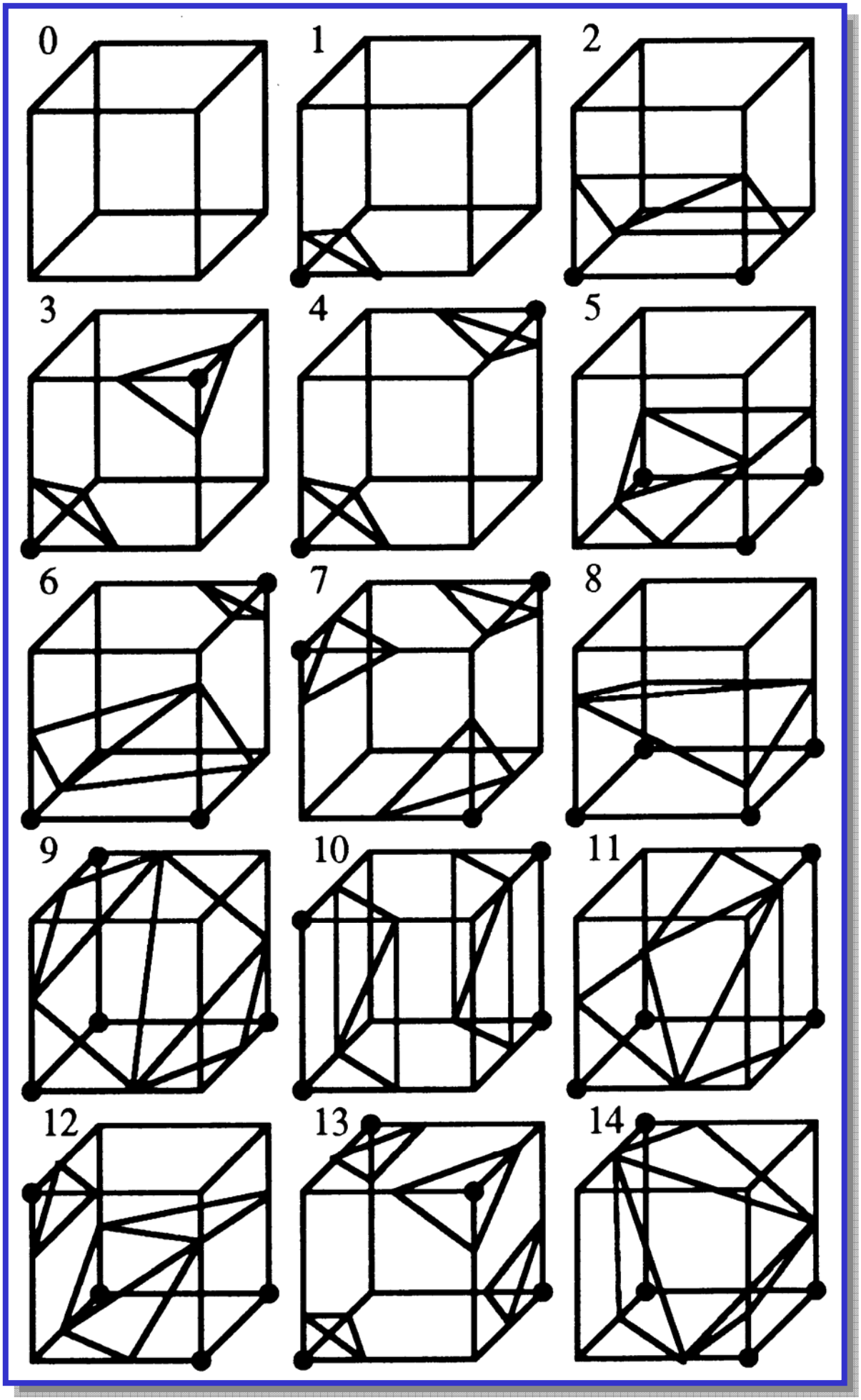
0
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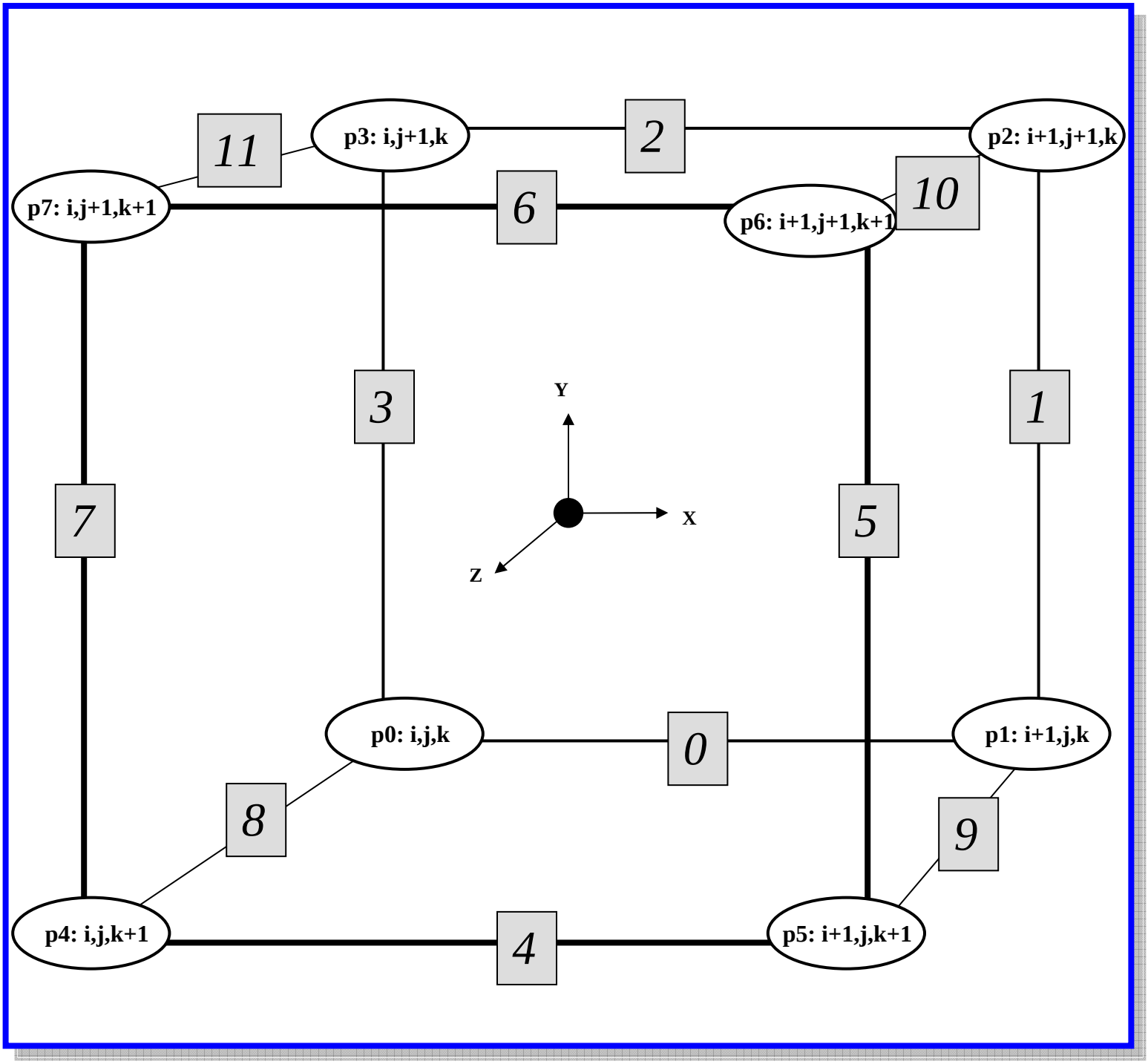
Polygonal Marching Cubes Organization Diagram



Polygonal Marching Cubes Data Structures

`int FoundEdgeIntersection[12]`

- One entry for each of the 12 edges.
- A FALSE (0) means S* did not intersect this edge
- A TRUE (!0) means S* did intersect this edge

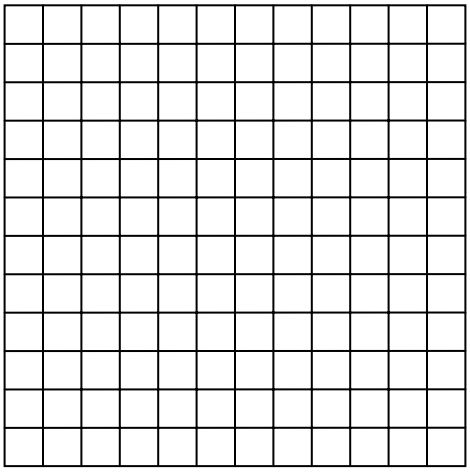
`Node EdgeIntersection[12]`

- If an intersection did occur on edge #i, Node[i] will contain the interpolated x, y, z, nx, ny, and nz.

`int FoundEdgeConnection[12][12]`

- A TRUE in entry [i][j] or [j][i] means that Marching Squares has decided there needs to be a line drawn from Cube Edge #i to Cube Edge #j

- Both entry [i][j] and [j][i] are filled so that it won't matter which order you search in later



Strategy in **`ProcessCube():`**

1. Use **`ProcessCubeEdge()`** 12 times to find which cube edges have S* intersections.

2. Return if no intersections found anywhere.

3. Call **`ProcessCubeQuad()`** 6 times to decide which cube edges will need to be connected. This is just a slightly modified version of doing a Marching Square. This leaves us with the **`FoundEdgeConnection[][]`** array filled.

4. Call **`DrawCubeTriangles()`** to create triangles from the connected edges.

Strategy in **`DrawCubeTriangles():`**

1. Look through the **`FoundEdgeConnection[][]`** array for a Cube Edge #a and a Cube Edge #b that have a connection between them.

2. If can't find one, then you are done with this cube.

3. Now look through the **`FoundEdgeConnection[][]`** array for a Cube Edge #c that is connected to Cube Edge #b. If you can't find one, something is wrong.

4. Draw a triangle using the **`EdgeIntersection[]`** nodes from Cube Edges #a, #b, and #c. Be sure to use **`glNormal3f()`** in addition to **`glVertex3f().`**

5. Turn to FALSE the **`FoundEdgeConnection[][]`**entries from Cube Edge #a to Cube Edge #b.

6. Turn to FALSE the **`FoundEdgeConnection[][]`**entries from Cube Edge #b to Cube Edge #c.

7. *Toggle* the **`FoundEdgeConnection[][]`**entries from Cube Edge #c to Cube Edge #a. If this connection was there before, we don't need it anymore. If it was not there before, then we just invented it and we will need it again.