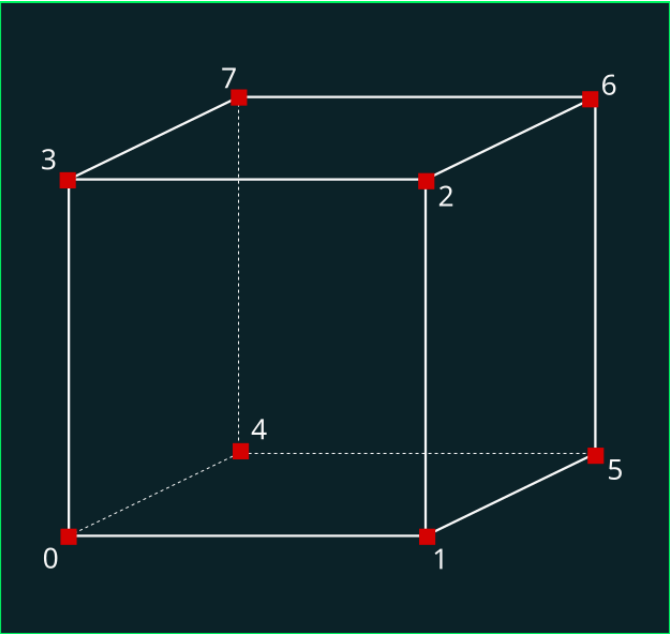


3D???????????

FBX
?
?

???Vertex / ???????

3D
3
3D
8



0	(-1, -1, -1)
1	(1, -1, -1)
2	(1, 1, -1)
3	(-1, 1, -1)
4	(-1, -1, 1)
5	(1, -1, 1)
6	(1, 1, 1)
7	(-1, 1, 1)

Unity Vertex3 (Index)
0 7


```

Vector3[] vertices = new Vector3[24];

vertices[0] = new Vector3(-1, -1, -1);
vertices[1] = new Vector3(1, -1, -1);
vertices[2] = new Vector3(1, 1, -1);
vertices[3] = new Vector3(-1, 1, -1);
vertices[4] = new Vector3(-1, -1, 1);
vertices[5] = new Vector3(1, -1, 1);
vertices[6] = new Vector3(1, 1, 1);
vertices[7] = new Vector3(-1, 1, 1);

vertices[8] = new Vector3(-1, -1, -1);
vertices[9] = new Vector3(1, -1, -1);
vertices[10] = new Vector3(1, 1, -1);
vertices[11] = new Vector3(-1, 1, -1);
vertices[12] = new Vector3(-1, -1, 1);
vertices[13] = new Vector3(1, -1, 1);
vertices[14] = new Vector3(1, 1, 1);
vertices[15] = new Vector3(-1, 1, 1);

vertices[16] = new Vector3(-1, -1, -1);
vertices[17] = new Vector3(1, -1, -1);
vertices[18] = new Vector3(1, 1, -1);
vertices[19] = new Vector3(-1, 1, -1);
vertices[20] = new Vector3(-1, -1, 1);
vertices[21] = new Vector3(1, -1, 1);
vertices[22] = new Vector3(1, 1, 1);
vertices[23] = new Vector3(-1, 1, 1);
}
}

```

????Triangle?

□□□□□□□□□□

Triangle□□□□□□□□□□□□□□□□□□□□

(Mesh)□□□□

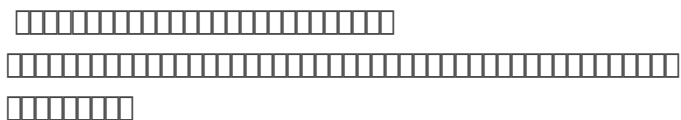
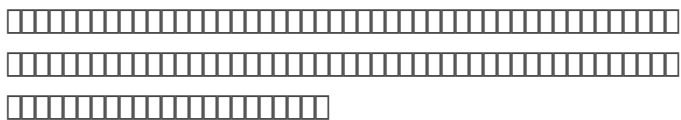


3

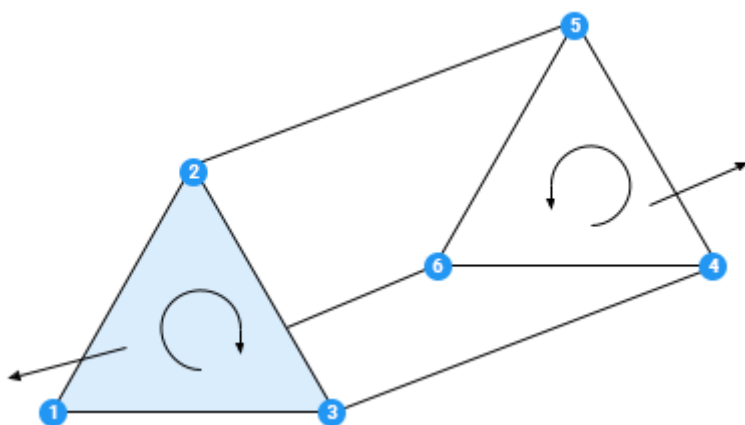
CCW

Clockwise - CW ☐☐☒☐☐☐

Counter - Clockwise -
Winding Order ()



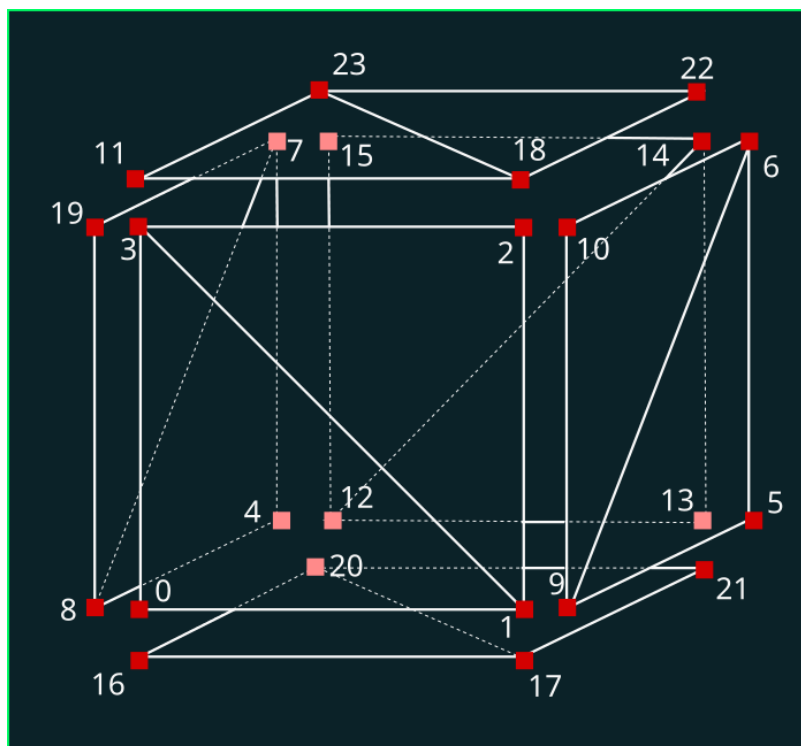
Unity



2

-
-

- →
 -
- →
 -



??

MyCube ...

- `triangles`
 - × 3 = 6 × 2 × 3 = 36
- `CreateTriangles()`
 - ```
triangles[0] = 0;
triangles[1] = 3;
triangles[2] = 1;
```
- `Awake()`  `CreateTriangles()`

```
// 初始化
private int[] triangles;

// Awake 在 Start 之前被调用
// 初始化三角形的顶点
private void Awake()
{
 CreateVertices();
 CreateTriangles();
}

// 初始化三角形
private void CreateTriangles()
{
 triangles = new int[36];
 int i = 0;

 // 第一个三角形
 triangles[i++] = 0;
 triangles[i++] = 3;
 triangles[i++] = 1;

 // 第二个三角形
 triangles[i++] = 1;
 triangles[i++] = 3;
 triangles[i++] = 2;

 // 第三个三角形
 triangles[i++] = 9;
 triangles[i++] = 10;
 triangles[i++] = 6;

 // 第四个三角形
 triangles[i++] = 9;
 triangles[i++] = 6;
 triangles[i++] = 5;
```

```
//
triangles[i++] = 20;
triangles[i++] = 16;
triangles[i++] = 17;

triangles[i++] = 20;
triangles[i++] = 17;
triangles[i++] = 21;

//
triangles[i++] = 7;
triangles[i++] = 8;
triangles[i++] = 4;

triangles[i++] = 7;
triangles[i++] = 19;
triangles[i++] = 8;

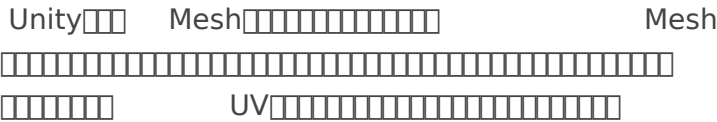
//
triangles[i++] = 14;
triangles[i++] = 12;
triangles[i++] = 13;

triangles[i++] = 14;
triangles[i++] = 15;
triangles[i++] = 12;

//
triangles[i++] = 18;
triangles[i++] = 11;
triangles[i++] = 23;

triangles[i++] = 18;
triangles[i++] = 23;
triangles[i++] = 22;
}
```

# ?????Mesh?



メッシュデータ

描画（レンダリング）

??

☐ MyCube ☐

- Mesh ☐
  - vertices ☐ triangles ☐
- ☐ Inspector ☐
- Awake ☐ ☐ MeshFilter ☐ MeshRenderer ☐

MyCube ☐

```
using UnityEngine;

//
public class MyCube : MonoBehaviour
{
```

```

//序列化
[SerializeField]
private Material material;

//顶点
private Vector3[] vertices;

//三角形
private int[] triangles;

//网格
private Mesh mesh;

// Awake Start 初始化
// 初始化网格
private void Awake()
{
 CreateVertices();
 CreateTriangles();

 mesh = new Mesh();
 mesh.vertices = vertices;
 mesh.triangles = triangles;
 mesh.RecalculateNormals(); //重新计算法线

 MeshFilter mf;
 MeshFilter mf = gameObject.AddComponent<MeshFilter>();
 mf.mesh = mesh;

 MeshRenderer mr;
 MeshRenderer mr = gameObject.AddComponent<MeshRenderer>();
 mr.material = material;
}

//创建顶点
private void CreateVertices()
{
 vertices = new Vector3[24];
}

```

```

 vertices[0] = new Vector3(-1, -1, -1);
 vertices[1] = new Vector3(1, -1, -1);
 vertices[2] = new Vector3(1, 1, -1);
 vertices[3] = new Vector3(-1, 1, -1);
 vertices[4] = new Vector3(-1, -1, 1);
 vertices[5] = new Vector3(1, -1, 1);
 vertices[6] = new Vector3(1, 1, 1);
 vertices[7] = new Vector3(-1, 1, 1);

```

```

 vertices[8] = new Vector3(-1, -1, -1);
 vertices[9] = new Vector3(1, -1, -1);
 vertices[10] = new Vector3(1, 1, -1);
 vertices[11] = new Vector3(-1, 1, -1);
 vertices[12] = new Vector3(-1, -1, 1);
 vertices[13] = new Vector3(1, -1, 1);
 vertices[14] = new Vector3(1, 1, 1);
 vertices[15] = new Vector3(-1, 1, 1);

```

```

 vertices[16] = new Vector3(-1, -1, -1);
 vertices[17] = new Vector3(1, -1, -1);
 vertices[18] = new Vector3(1, 1, -1);
 vertices[19] = new Vector3(-1, 1, -1);
 vertices[20] = new Vector3(-1, -1, 1);
 vertices[21] = new Vector3(1, -1, 1);
 vertices[22] = new Vector3(1, 1, 1);
 vertices[23] = new Vector3(-1, 1, 1);
}

```

```

//

```

```

private void CreateTriangles()

```

```

{
 triangles = new int[36];
 int i = 0;

```

```

 /

```

```

 triangles[i++] = 0;
 triangles[i++] = 3;
 triangles[i++] = 1;

```

```
triangles[i++] = 1;
triangles[i++] = 3;
triangles[i++] = 2;
```

//

```
triangles[i++] = 9;
triangles[i++] = 10;
triangles[i++] = 6;
```

```
triangles[i++] = 9;
triangles[i++] = 6;
triangles[i++] = 5;
```

//

```
triangles[i++] = 20;
triangles[i++] = 16;
triangles[i++] = 17;
```

```
triangles[i++] = 20;
triangles[i++] = 17;
triangles[i++] = 21;
```

//

```
triangles[i++] = 7;
triangles[i++] = 8;
triangles[i++] = 4;
```

```
triangles[i++] = 7;
triangles[i++] = 19;
triangles[i++] = 8;
```

//

```
triangles[i++] = 14;
triangles[i++] = 12;
triangles[i++] = 13;
```

```
triangles[i++] = 14;
triangles[i++] = 15;
triangles[i++] = 12;
```

```
//
```

```
triangles[i++] = 18;
```

```
triangles[i++] = 11;
```

```
triangles[i++] = 23;
```

```
triangles[i++] = 18;
```

```
triangles[i++] = 23;
```

```
triangles[i++] = 22;
```

```
}
```

```
}
```

Revision #5

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