**Cube:**

Identify true vertices in vertices vector

vertices size: 36

|  |  |  |
| --- | --- | --- |
| Vertices vector | True index in obj file | Face number |
| 0  0.5 -0.5 -0.5  1  -0.5 -0.5 -0.5  2  0.5 0.5 -0.5 | 0  1  2 | 1 |
| 3  -0.5 -0.5 -0.5  4  -0.5 0.5 -0.5  5  0.5 0.5 -0.5 | 1  3  2 | 2 |
| 6  -0.5 -0.5 0.5  7  0.5 -0.5 0.5  8  -0.5 0.5 0.5 | 4  5  6 | 3 |
| 9  0.5 -0.5 0.5  10  0.5 0.5 0.5  11  -0.5 0.5 0.5 | 5  7  6 | 4 |
| 12  0.5 0.5 0.5  13  0.5 -0.5 0.5  14  0.5 0.5 -0.5 | 7  5  2 | 5 |
| 15  0.5 -0.5 0.5  16  0.5 -0.5 -0.5  17  0.5 0.5 -0.5 | 5  0  2 | 6 |
| 18  0.5 -0.5 0.5  19  -0.5 -0.5 0.5  20  0.5 -0.5 -0.5 | 5  4  0 | 7 |
| 21  -0.5 -0.5 0.5  22  -0.5 -0.5 -0.5  23  0.5 -0.5 -0.5 | 4  1  0 | 8 |
| 24  -0.5 0.5 0.5  25  0.5 0.5 0.5  26  -0.5 0.5 -0.5 | 6  7  3 | 9 |
| 27  0.5 0.5 0.5  28  0.5 0.5 -0.5  29  -0.5 0.5 -0.5 | 7  2  3 | 10 |
| 30  -0.5 -0.5 0.5  31  -0.5 0.5 0.5  32  -0.5 -0.5 -0.5 | 4  6  1 | 11 |
| 33  -0.5 0.5 0.5  34  -0.5 0.5 -0.5  35  -0.5 -0.5 -0.5 | 6  3  1 | 12 |

Check adjacency:

v[0], v[2], v[4] is the current triangle

v[1] is the adjacent vertex of v[0], v[2]

v[3] is the adjacent vertex of v[2], v[4]

v[5] is the adjacent vertex of v[4], v[0]

|  |  |  |  |
| --- | --- | --- | --- |
| Current triangle number | Indices | Vertices from vertices vector | True index in obj file |
| 1 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 0  21  1  4  2  15 | 0 = 0, 21 = 4, 1 = 1 -> face 8  1 = 1, 4 = 3, 2 = 2 -> face 2  2 = 2, 15 = 5, 0 = 0 -> face 6 |
| 2 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 3  33  4  27  5  0 | 3 = 1, 4 = 3, 33 = 6 -> face 12  4 = 3, 5 = 2, 27 = 7 -> face 10  5 = 2, 3 = 1, 0 = 0 -> face 1 |
| 3 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 6  20  7  10  8  32 | 6 = 4, 7 = 5, 20 = 0 -> face 7  7 = 5, 8 = 6, 10 = 7 -> face 4  8 = 6, 32 = 1, 6 = 4 -> face 11 |
| 4 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 9  14  10  26  11  6 | 9 = 5, 14 = 2, 10 = 7 -> face 5  10 = 7, 26 = 3, 11 = 6 -> face 9  11 = 6, 6 = 4, 9 = 5 -> face 3 |
| 5 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 12  11  13  16  14  29 | 12 = 7, 11 = 6, 13 = 5 -> face 4  13 = 5, 16 = 0, 14 = 2 -> face 6  14 = 2, 29 = 3, 12 = 7 -> face 10 |
| 6 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 15  19  16  1  17  12 | 15 = 5, 19 = 4, 16 = 0 -> face 7  16 = 0, 1 = 1, 17 = 2 -> face 1  17 = 2, 12 = 7, 15 = 5 -> face 5 |
| 7 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 18  8  19  22  20  17 | 18 = 5, 8 = 6, 19 = 4 -> face 3  19 = 4, 22 = 1, 20 = 0 -> face 8  20 = 0, 17 = 2, 18 = 5 -> face 6 |
| 8 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 21  31  22  2  23  18 | 21 = 4, 31 = 6, 22 = 1 -> face 11  22 = 1, 2 = 2, 23 = 0 -> face 1  23 = 0, 18 = 5, 21 = 4 -> face 7 |
| 9 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 24  9  25  28  26  35 | 24 = 6, 9 = 5, 25 = 7 -> face 4  25 = 7, 28 = 2, 26 = 3 -> face 10  26 = 3, 35 = 1, 24 = 6 -> face 12 |
| 10 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 27  13  28  3  29  24 | 27 = 7, 13 = 5, 28 = 2 -> face 5  28 = 2, 3 = 1, 29 = 3 -> face 2  29 = 3, 24 = 6, 27 = 7 -> face 9 |
| 11 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 30  7  31  34  32  23 | 30 = 4, 7 = 5, 31 = 6 -> face 3  31 = 6, 34 = 3, 32 = 1 -> face 12  32 = 1, 23 = 0, 30 = 4 -> face 8 |
| 12 | V[0]  V[1]  V[2]  V[3]  V[4]  V[5] | 33  25  34  5  35  30 | 33 = 6, 25 = 7, 34 = 3 -> face 9  34 = 3, 5 = 2, 35 = 1 -> face 2  35 = 1, 30 = 4, 33 = 6 -> face 11 |