1. (i) It is made up of vertices, vertices are connected together into triangles to make a mesh.

(ii) Vertices are placed in a virtual 3d space, and the space between them is connected with 2d faces to create an illusion of a solid object.

|  |  |  |  |
| --- | --- | --- | --- |
| Vertex | X | Y | Z |
| 0 | 1 | -1 | -2 |
| 1 | -1 | -1 | -2 |
| 2 | 1 | -1 | 2 |
| 3 | -1 | -1 | 2 |
| 4 | 0 | 2 | -2 |
| 5 | 0 | 2 | 2 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Index List |  |  |  |  |
| 0 | 0 | 1 | 5 | Back Face |
| 1 | 0 | 5 | 4 | Back Face |
| 2 | 2 | 3 | 1 | Bottom Face |
| 3 | 2 | 1 | 0 | Bottom Face |
| 4 | 4 | 5 | 3 | Front Face/Slope |
| 5 | 4 | 3 | 2 | Front Face/Slope |
| 6 | 2 | 0 | 4 | Right Face |
| 7 | 1 | 3 | 5 | Left Face |

1. (i) This will lay out the surfaces of the 3d model on a flat 2d plane allowing an image/texture to be applied from a simple 2d image.

|  |  |  |
| --- | --- | --- |
|  | U | V |
| 0 | 0 | 0 |
| 1 | 0 | 0.5 |
| 2 | 0 | 1 |
| 3 | 0.5 | 0 |
| 4 | 0.5 | 0.5 |
| 5 | 0.5 | 1 |
| 6 | 1 | 0 |
| 7 | 1 | 0.5 |
| 8 | 1 | 1 |

(ii)

|  |  |  |  |
| --- | --- | --- | --- |
| 0 | 0, 1, 5 | 3, 4, 7 | Back Face |
| 1 | 0, 5, 4 | 3, 7, 6 | Back Face |
| 2 | 2, 3, 1 | 4, 5, 8 | Bottom Face |
| 3 | 2, 1, 0 | 5, 8, 7 | Bottom Face |
| 4 | 4, 5, 3 | 0, 1, 4 | Front Face/Slope |
| 5 | 4, 3, 2 | 0, 4, 3 | Front Face/Slope |
| 6 | 2, 0, 4 | 2, 5, 4 | Right Face |
| 7 | 1, 3, 5 | 1, 2, 4 | Left Face |