* 1. \Texture Mapping:

Texture Mapping was achieved in the following manner:

1. To support textures, 2 additional field were added to the xml file, viz.

<image> to refer to the texture image.

“Texture” (within the <instance of> tag) to refer to the texture image.

1. To add texture to the objects in the scene-graph, first, the texture map was passed to the renderer.
2. Which then selected the texture for the object to be drawn, from the texture map, and passed the texture matrix, the texture image, the texture parameters to the shader, and finally bound the texture to the object to be rendered, before it was rendered.
   1. Textures in Scene:
3. 4 different texture images have been used in our scene-graph, the checker-board box texture, the die texture, the earth texture and the white/ white-box for everything that we didn’t want add a texture to.
4. The floor of each room has the checkerboard box texture, the body of our animating object has the die texture and sphere in the table-scene has the earth texture, while the remaining objects have been covered with white/ white-box texture.
   1. Bounding Boxes:

To construct the bounding box:

1. We first traverse to the LeafNode, where we calculate the bounding box for the object using the computeBoundingbox () method.
2. To construct the actual box, we use the getMinimumBounds () and getMaximumBounds () methods, and using the two vectors we construct the entire box.
3. GroupNodes and TransformNodes simply traverse the scene-graph till they reach the LeafNode, where the bounding box will be set, and the value of the bounding box will be passed up the graph, updating at each node, till they reach the root.
   1. Exploded View:

We couldn’t figure out a way build the exploded view according to the method shown in the assignment. So, we simply cloned the original scene-graph and added an animation transform animate to show the exploded illustration of the given scene-graph.

2.3 Program Setup:

1. We bound the explosion transformation to the key “E” as mentioned in the assignment.

2. Initially we render the original scene-graph, and on key-press of “E”, we get the render the exploded version. Subsequently, on the alternate “E” key press, we render the original scene-graph.

Link for animation video:

[Animation Video](https://youtu.be/gWR2lw8r0yg)

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