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Short note on Aliasing and Anti Aliasing

Aliasing :- A problem with high resolution texturing is aliasing, which occurs when adjacent pixels in a rendered image are sampled from pixels that are far apart in a texture image.

- By down-sampling - reducing the size of a texture - aliasing can be reduced for far away or small objects, but then textured objects look blurry when close to the viewer.

Antialiasing :- It is a technique used in computer graphics to remove the aliasing effect. The aliasing effect is the appearance of jagged or "jaggies" in a rasterized image. The problem of jagged edges technically occurs due to distortion of the image when scan conversion is done with sampling at a low frequency, which is also known as undersampling. Aliasing occurs when real-world objects which comprise of smooth, continuous curves are rasterized using pixels.

Cause of anti-aliasing is Undersampling. Undersampling results in loss of information of the picture. Undersampling occurs when sampling is done at a frequency lower than Nyquist sampling frequency. to avoid this loss, we need to have our sampling frequency atleast twice that of highest frequency occurring in the object.