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FACULTY OF ENGINEERING & TECHNOLOGY

BCS -504 Computer Graphics & Multimedia

Lecture-15

Mr. Dilip Kumar J Saini
Assistant Professor
Computer Science & Engineering

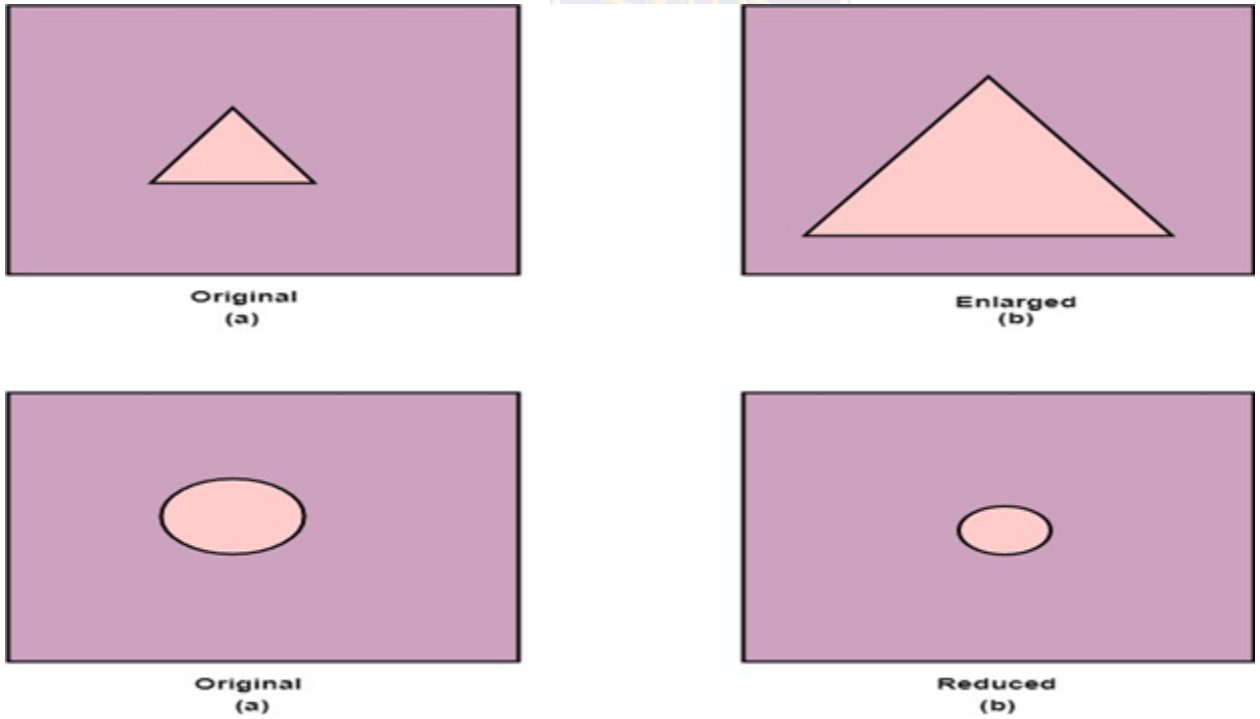
OUTLINE

- **SCALING**
- **MATRIX FOR SCALING**
- **SCALING OF THE OBJECT RELATIVE TO A FIXED POINT**

Scaling

Scaling is used to change the size of an object. The size can be increased or decreased. The scaling three factors are required S_x S_y and S_z.

S_x=Scaling factor in x- direction
S_y=Scaling factor in y-direction
S_z=Scaling factor in z-direction



Matrix for Scaling

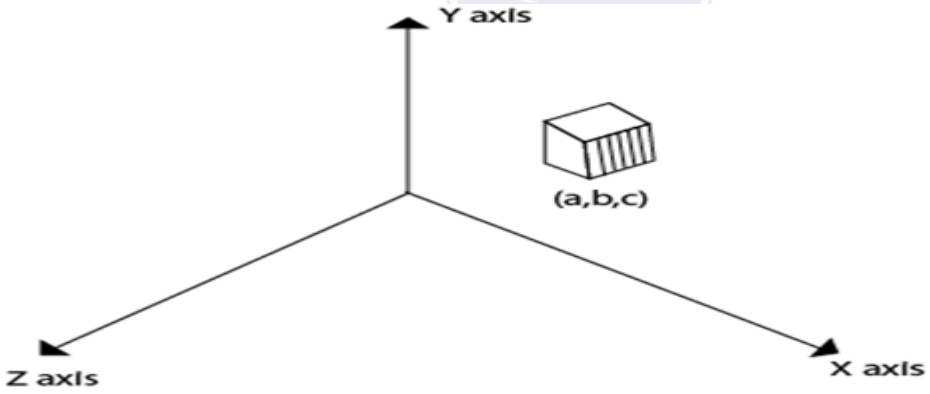
$$\begin{Bmatrix} S_x & 0 & 0 & 0 \\ 0 & S_y & 0 & 0 \\ 0 & 0 & S_z & 0 \\ 0 & 0 & 0 & 1 \end{Bmatrix}$$

Scaling of the object relative to a fixed point

Following are steps performed when scaling of objects with fixed point (a, b, c). It can be represented as below:

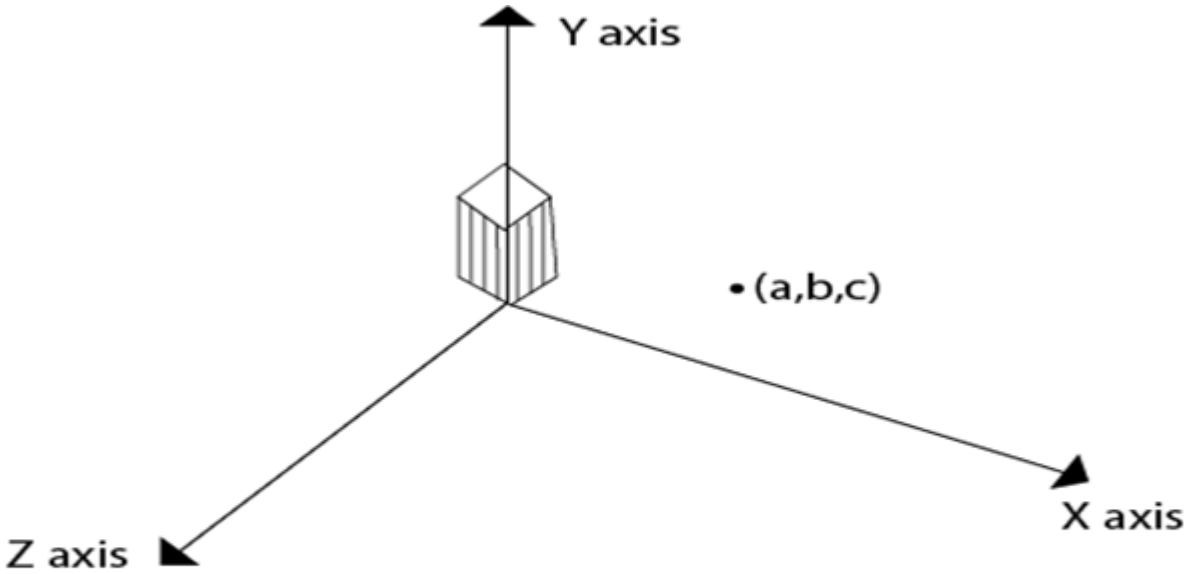
1. Translate fixed point to the origin
2. Scale the object relative to the origin
3. Translate object back to its original position.

In figure (a) point (a, b, c) is shown, and object whose scaling is to done also shown in steps in fig (b), fig (c) and fig (d).



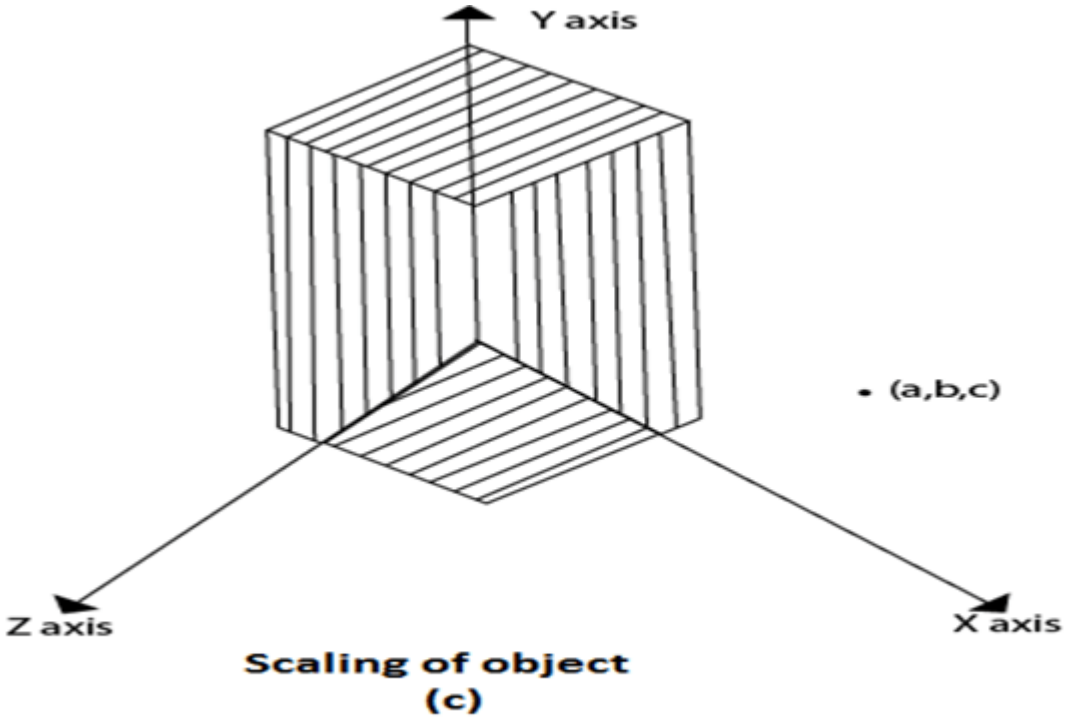
Object & point for scaling
(a)

Scaling of the object relative to a fixed point



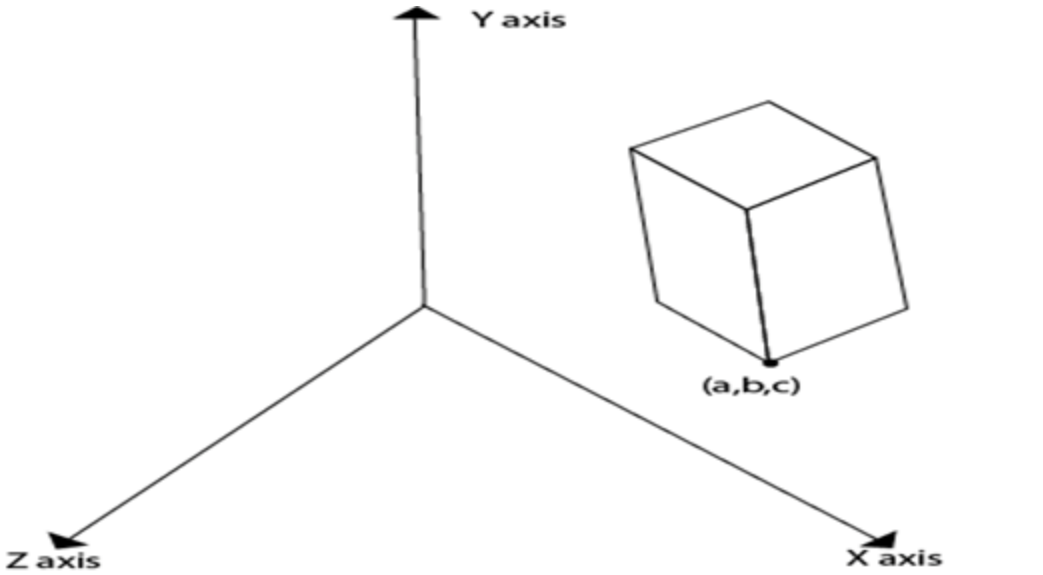
Object transfer at origin
(b)

Scaling of the object relative to a fixed point



Scaling of object
(c)

Scaling of the object relative to a fixed point



Object shifted to original position after scaling
(d)

Multiple Choice Question

MUTIPLE CHOICE QUESTIONS:

Sr no	Question	Option A	Option B	OptionC	OptionD
1	Plasma panels is strictly monochromatic device that means shows only ……. color	1	2	3	a & b
2	LED stands for…..	Light Emitting Diversion	Lighingt Emitting Diode	Light Emitting Diode	Light Emitt Diode
3	Which buffer will store the picture definition ?	frame buffer	refresh buffer	bug buffer	backward buffer
4	Which techniques used the picture definition?	CRT	SKL	Projection	transform ation
5	For line refreshing of CRT information is read from the ……...	regain buffer	frame buffer	refresh buffer	b & c

REFERENCES

- http://www.engppt.com/search/label/Computer%20Graphics