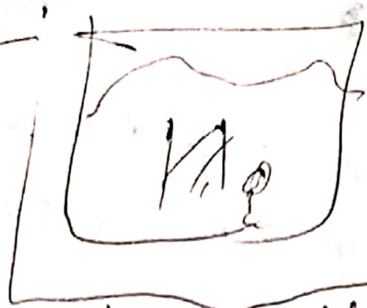
Painter's Algo, —



Z value

far → less → large

1) Sorting the surfaces according to Z value (decreasing)

↓ Object, Image space both.

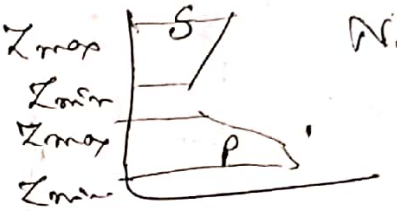
2) Scan Conversion of sorted Surfaces (Images Space)

Tests – Depth Overlap

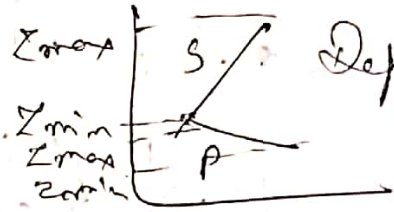
S or S' → Scan Conversion of

Reorder

S' cover full



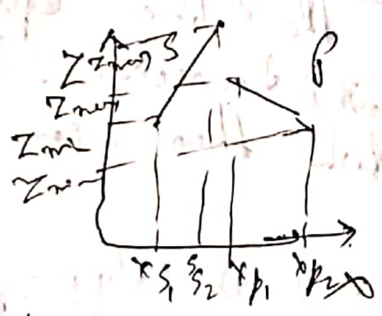
No Depth Overlap



Depth Overlap

Test 1 —

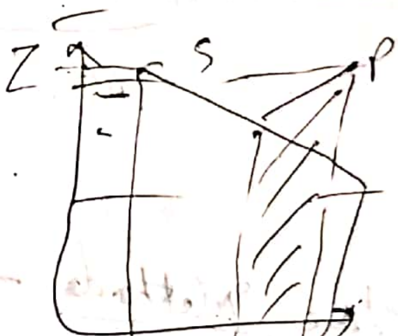
Case I



Check for X Y plane overlap

S → P No reordering req.

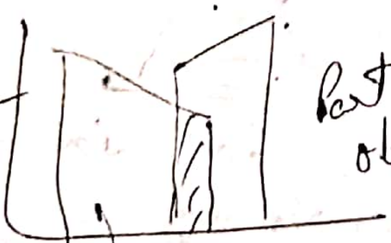
Case II



Bounding Rectangle of P is completely inside S

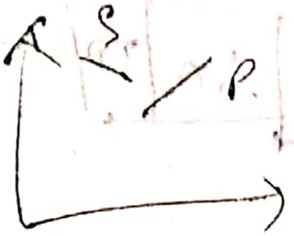
We have to reorder.

Case III



Partially obscured problem

Test 2 — Check if surface S is outside of surface P (relative to view plane)



$Ax + By + Cz + D > 0$

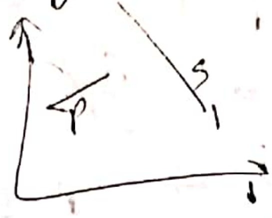
$Ax' + By' + Cz' + D > 0$

(S point) S is completely outside of P then no need to reorder.

$S \rightarrow P$

If no the Test 3

Test 3 – If P is completely inside the surface S

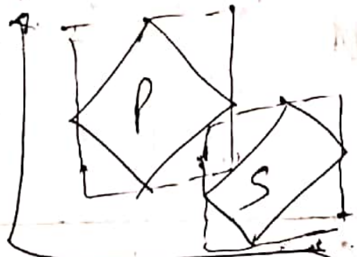


P is inside of S

So scan convert S

$Ax + By + Cz + D < 0$

Test 4 –



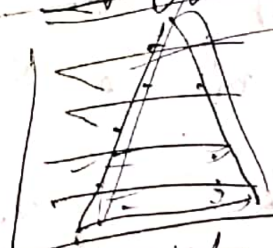
$y = mx + c$

Bounding rectangles overlap but projection don't then we the line equations & check for intersection. If no intersection then scan convert S.

Scan Line Methods –

↳ Image Space

2 D polygon filling –



Extension –

↳ 3 Tables

- Edge Table
- Active Edge Table — Store info of each & every scan line
- Polygon Table

Stores Edge Information of polygon

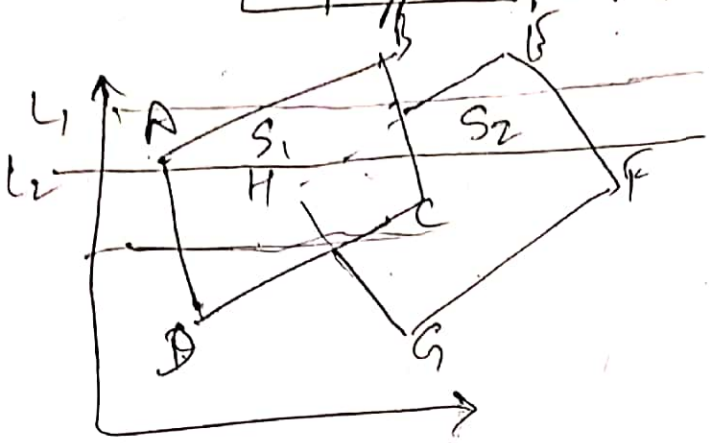
Depending on polygon surface

X	Ymax	Δx	ID

Polygon Table —

ID	Polygon Coefficient	Shading Info	IN/OUT

→ For Scan line surface in IN/out



Active Edge Table —

Scan Line	Entries			
L_1	AB	BC	EH	EF
L_2	AD	EH	BC	FG

L_1 AB S_1
BC S_1
EH S_2
EF S_2

No Overlap

L_2 AD S_1
EH S_1 & S_2
BC S_1 & S_2
FG S_2

Depth ↔

$S_1 < S_2$

Z value

Area Subdivision Method —