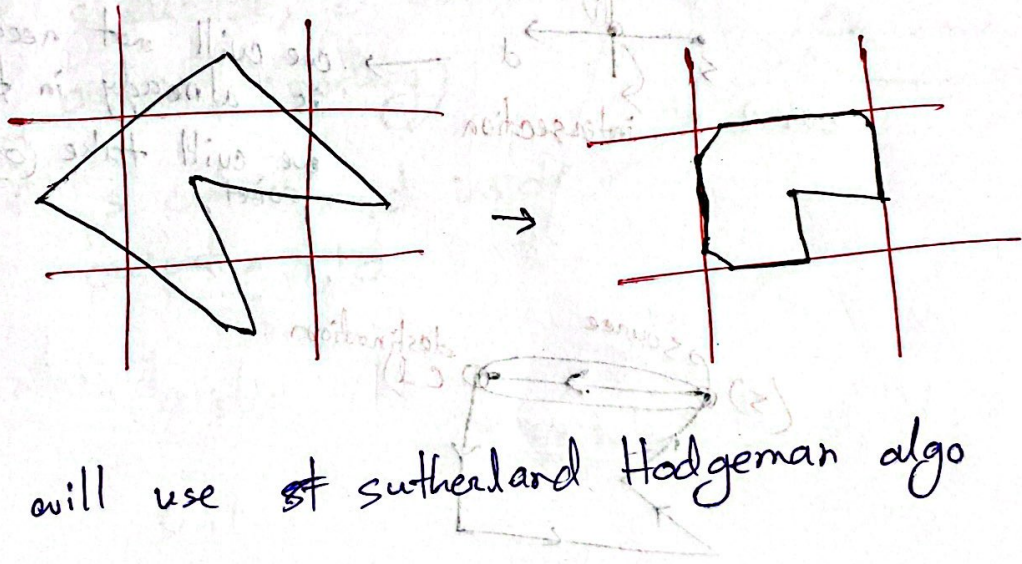


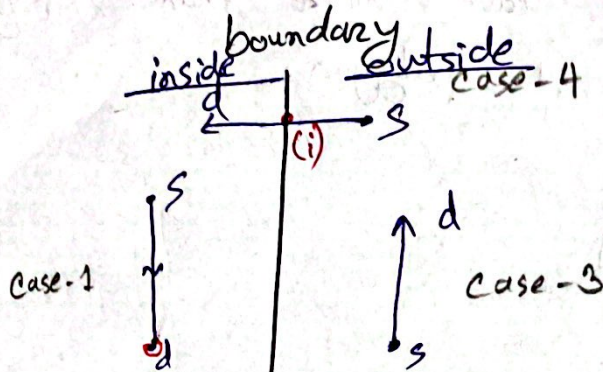
Polygon Clipping

08.07.2023

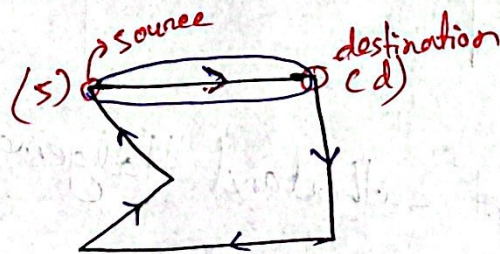
Polygon: When we have more than 2 edges/vertices we call it polygon.



We will use ~~st~~ Sutherland Hodgeman algo



case-2. \rightarrow we will not need d as it is already in the outside region. we will take only the intersection point.



Algo

for each of the edges:

if (s and d) inside

output = d

contain points/vertices

if s inside, d outside

outside = i

if s outside, d outside

output = (nothing)

if s outside, d inside

output = i, d

4 times

tail to head

intersection

last

1, 1

1

←

BA

0

—

←

BC

0

—

←

CD

1

0

←

DE

1

1

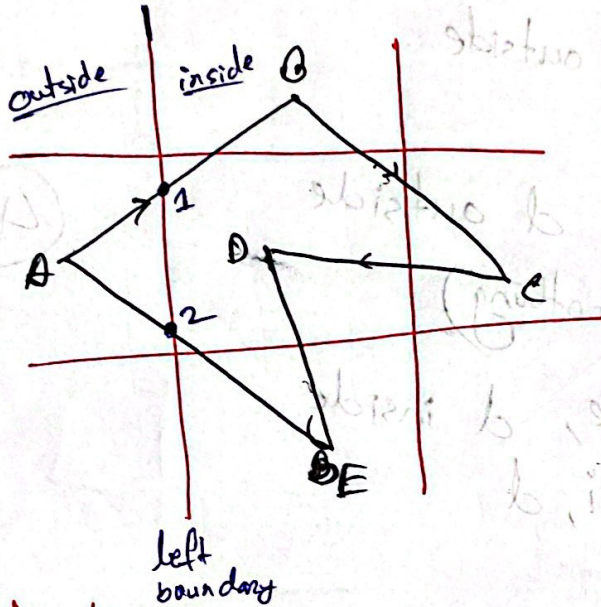
←

AD

→ for the

Output list = tail to head

Example:



For left boundary

sd

intersection

output list

AB

→

1

1, B

(case-4)

BC

→

—

C

(case-1)

CD

→

—

D

(n)

DE

→

2

E

(n)

EA

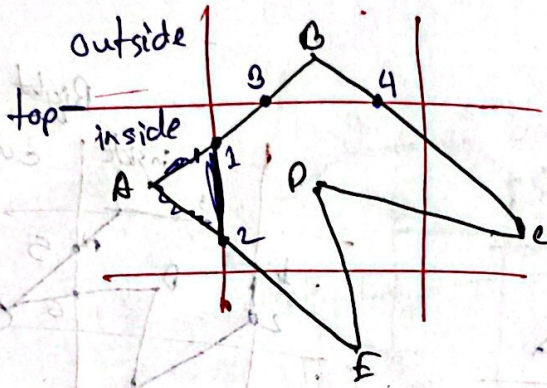
→

2

2

(case-2)

Output list = 1, B, C, D, E, 2 for polygon



ⓓ We have to take the previous output list to create new source-destination (SD).

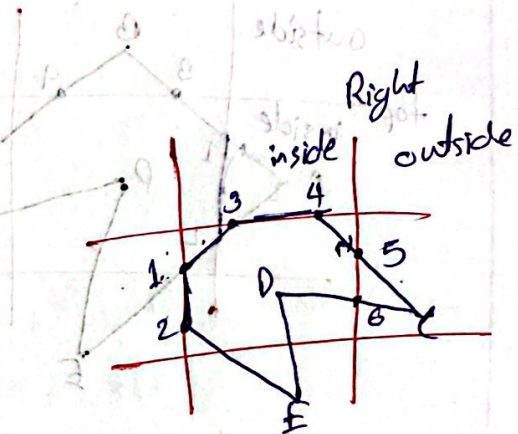
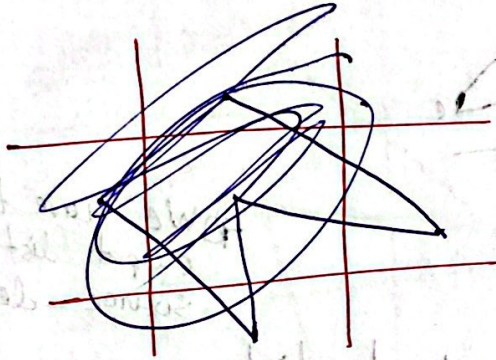
For top boundary

<u>SD</u>	<u>Intersection</u>	<u>Output-list</u>
1B	3	3 (case-2)
BC	4	4, C (case-4)
CD	—	D (case-1)
DE	—	E
E2	—	2
21	—	1

Output-list = 3, 4, C, D, E, 2, 1

= tail -> head

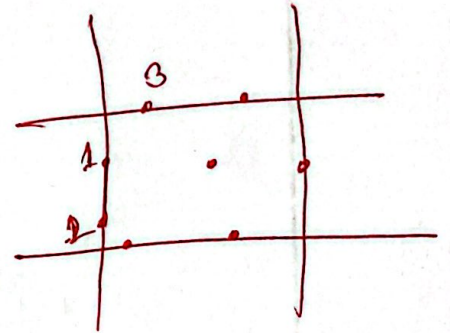
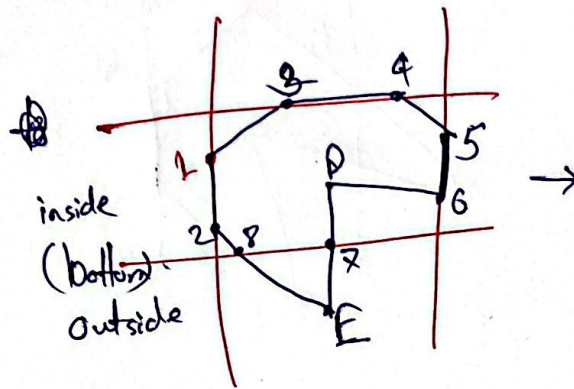
for Right Boundary



<u>SD</u>	<u>Intersection</u>	<u>Output-list</u>	
34	→	4	
4C	→	5	
CD	→	6, D	
DE	→	E	
E2	→	2	
21	→	1	
13	→	3	

Output-list = 4, 5, 6, D, E, 2, 1, 3

For Bottom Boundary



<u>SO</u>	<u>Intersection</u>	<u>Output list</u>
4 5 →	—	→ 5
5 6 →	—	→ 6
6 0 →	—	→ 0
0 E →	7	→ 7
E 2 →	8	→ 8, 2
2 1 →	—	→ 1
1 3 →	—	→ 3
3 4 →	—	→ 4

Output-list = 5, 6, 0, 7, 8, 2, 1, 3, 4