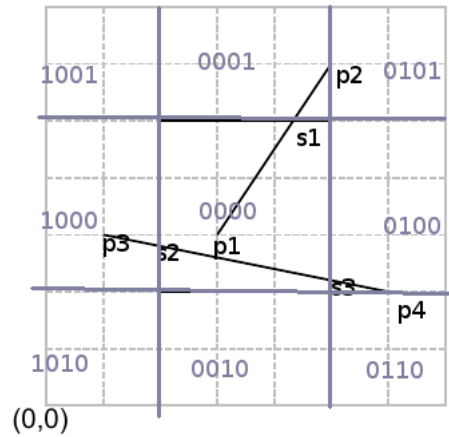


# Computer Graphics: Assignment 08

Lina Gundelwein, Letitia Parcalabescu, Anushalakshmi Manila

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## 1 Clipping



First line

- $\text{Outcode}(P_1) \vee \text{Outcode}(P_2) \neq 0 \rightarrow$  no trivial accept
- $\text{Outcode}(P_1) \wedge \text{Outcode}(P_2) == 0 \rightarrow$  no trivial reject
- Calculate  $S_1$
- $\text{Outcode}(P_1) \vee \text{Outcode}(S_1) == 0 \rightarrow$  trivial accept

Second line

- $\text{Outcode}(P_3) \vee \text{Outcode}(P_4) \neq 0 \rightarrow$  no trivial accept
- $\text{Outcode}(P_3) \wedge \text{Outcode}(P_4) == 0 \rightarrow$  no trivial reject
- Calculate  $S_2$
- $\text{Outcode}(P_4) \vee \text{Outcode}(S_2) \neq 0 \rightarrow$  no trivial accept

- $\text{Outcode}(P_4) \vee \text{Outcode}(S_2) == 0 \rightarrow \text{no trivial reject}$
- Calculate  $S_3$
- $\text{Outcode}(S_3) \vee \text{Outcode}(S_2) == 0 \rightarrow \text{trivial accept}$

## 2 Polygon Clipping

- (a) 2
- (b) n-1
- (c) 4
- (d) n+2

## 3 Sutherland Hodgman Algorithm

- Clip top
  - $P_1P_2 \rightarrow P_2$
  - $P_2P_3 \rightarrow S_1 = (0.7, 1.0)$
  - $P_3P_4 \rightarrow S_2 = (-0.5, 1.0), P_4$
  - $P_4P_1 \rightarrow P_1$
- Clip bottom
  - $P_1P_2 \rightarrow P_2$
  - $P_2S_1 \rightarrow S_1$
  - $S_1S_2 \rightarrow S_2$
  - $S_2P_4 \rightarrow P_4$
  - $P_4P_1 \rightarrow P_1$
- Clip right
  - $P_1P_2 \rightarrow S_3 = (1.0, -0.875)$
  - $P_2S_1 \rightarrow S_4 = (1.0, 0.25), S_1$
  - $S_1S_2 \rightarrow S_2$
  - $S_2P_4 \rightarrow P_4$
  - $P_4P_1 \rightarrow P_1$
- Clip left
  - $P_1S_3 \rightarrow S_3$
  - $S_3S_4 \rightarrow S_4$

- $S_4S_1 \rightarrow S_1$
- $S_1S_2 \rightarrow S_2$
- $S_2P_4 \rightarrow S_5 = (-1.0, 0.75)$
- $P_4P_1 \rightarrow S_6 = (-1.0, 0), P_1$

$\Rightarrow$  clipped polygon:  $S_3, S_4, S_1, S_2, S_5, S_6, P_1$