

## Simple 2D Geometric Shape Models

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## Geometric Shape Models

Here: rigid,  linear / circular boundary segments

Options:

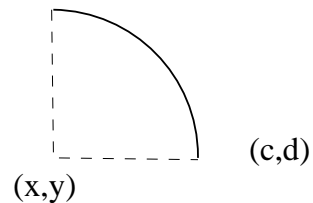
- Region representation: pixel list, quadtree
- Boundary representation
  - Curve
    - \* Set of boundary segments
    - \* Pixel list / chain code (incremental pixel list)
  - Vertices

## Polycurve / Polyline Modeling

Set of vertices connected by line / curve segments

Line segment:  $(a,b)$  -L-  $(c,d)$

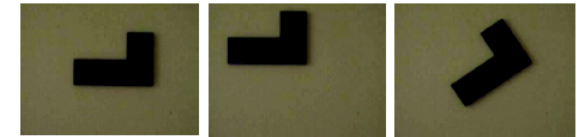
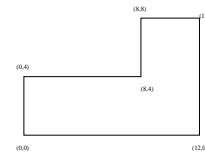
Arc segment:  $(a,b)$  -arc( $x,y$ )-  $(c,d)$



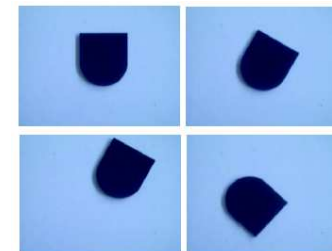
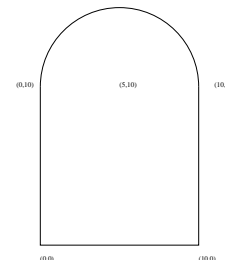
Arbitrary position in  object-centered coordinate system

## Example

$(0,0)$  -L-  $(12,0)$  -L-  $(12,8)$  -L-  $(8,8)$  -L-  $(8,4)$  -L-  $(0,4)$  -L-  $(0,0)$



$(0,0)$  -L-  $(10,0)$  -L-  $(10,10)$  -arc( $5,10$ )-  $(0,10)$  -L-  $(0,0)$



## What We Have Learned

1. Simple 2D  Part Modeling