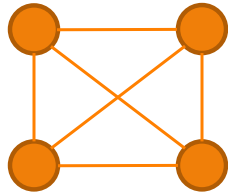


- When an Euler path is impossible, we can get an approximate path
- In the approximate path, some edges will need to be retraced
- An *optimal approximation* of a Euler path is a path with the minimum number of edge retraces

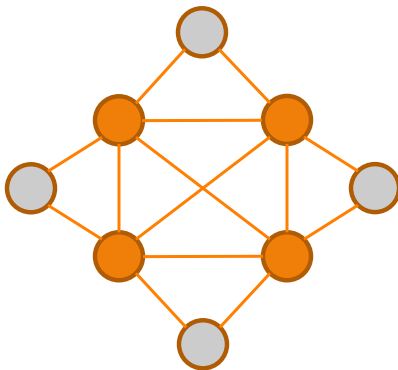
Approximating Euler Paths

- Graphs (or shapes) with repeated patterns can be defined parametrically (in terms of a parameter, say k)
- We define a D- k Graph (Diamond- k Graph, where $k \geq 0$)

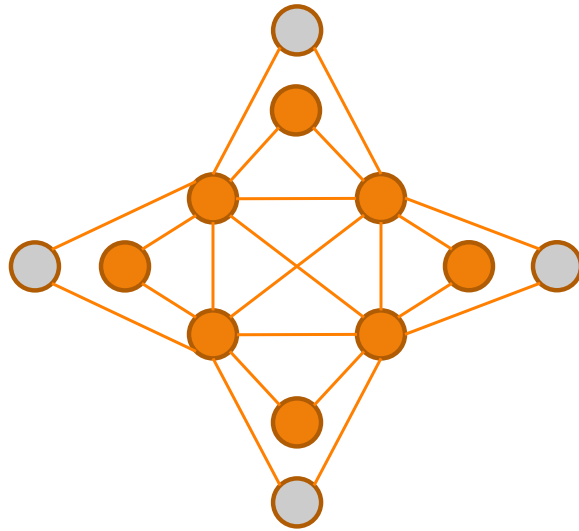
Defining Graphs using Parameters



D-0 Graph



D-1 Graph



D-2 Graph

- Draw the graphs:
 - D-3
 - D-4
 - D-5
- Take home question: What is the minimum number of edge retraces in an optimal approximation of a Euler path in a D-5 graph?

Higher-order D graphs