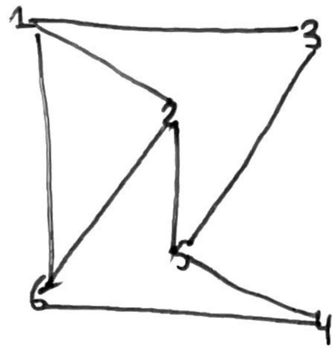
* you can post

Homework 17

(1) Example 1:

deg (1) = 3.
deg (2) = 3
deg (3) = 2
deg (4) = 2
deg (5) = 3
deg (6) = 3

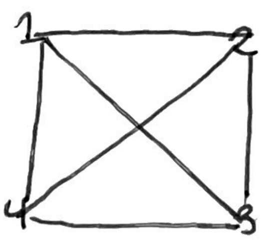


- No Eularian cycle because some have odd degrees
- No Eularian path because 4 odd degrees

$$\begin{bmatrix} 0 & 1 & 1 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 1 & 0 & 0 \end{bmatrix}.$$

Example 2:

deg (1) = 3
deg (2) = 3
deg (3) = 3
deg (4) = 3

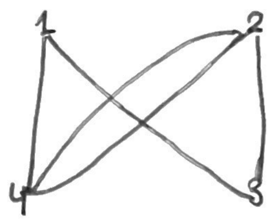


- No cycle because some have odd degrees
- No path because 4 odd degrees

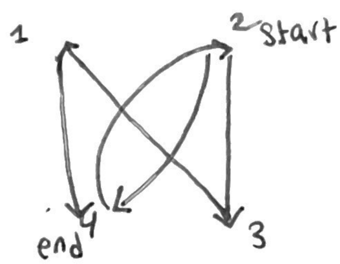
$$\begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 \end{bmatrix}$$

(2) Example 1:

$\deg(1) = 2$
$\deg(2) = 3$
$\deg(3) = 2$
$\deg(4) = 3$

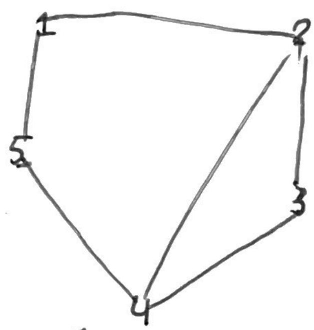


$$\begin{bmatrix} 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 2 \\ 1 & 1 & 0 & 0 \\ 1 & 2 & 0 & 0 \end{bmatrix}$$

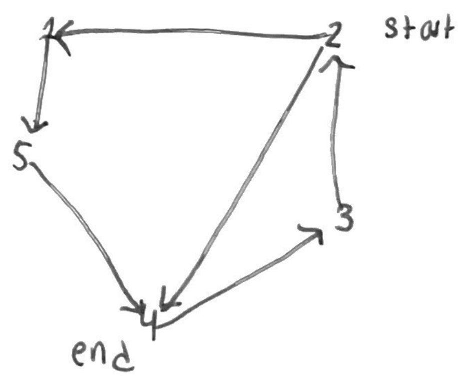


Example 2:

$\deg(1) = 2$
$\deg(2) = 3$
$\deg(3) = 2$
$\deg(4) = 3$
$\deg(5) = 2$

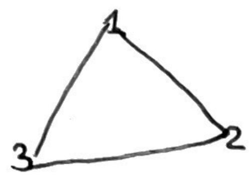


$$\begin{bmatrix} 0 & 1 & 0 & 0 & 1 \\ 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 & 0 \end{bmatrix}$$

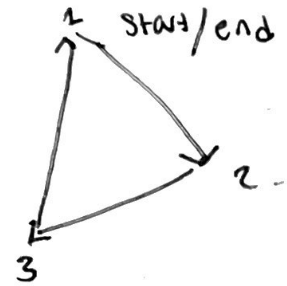


(3)

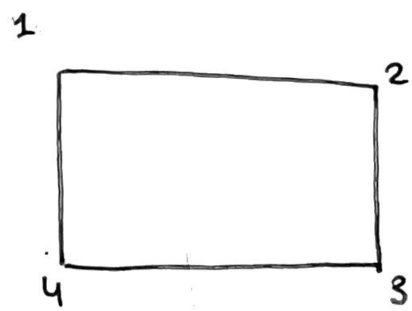
deg(1) = 2
deg(2) = 2
deg(3) = 2



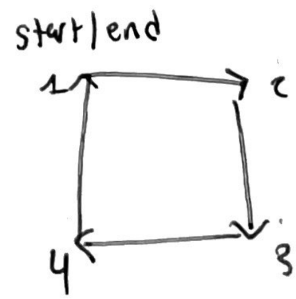
$$\begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$$



deg(1) = 2
deg(2) = 2
deg(3) = 2
deg(4) = 2



$$\begin{bmatrix} 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 0 \end{bmatrix}$$



(4) If G is a graph that has a Eularian cycle, you arrive at a vertex with one edge, and leave by another. This means the degree of each vertex is a multiple of 2 (in other words, an even number)

(5) If G is a graph that has a Eularian path P, you arrive at every vertex, except for the starting and ending, the same number of times that you leave it. Let's call this value n. This means there are 2n edges that have the vertex as its endpoint. The starting vertex leaves the path one more time than it enters, 2n + 1, and the ending vertex leaves the path one less time than it enters, 2n - 1.