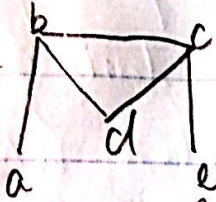


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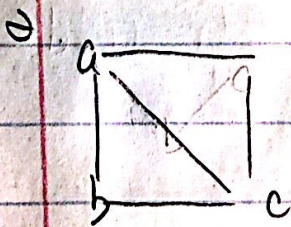


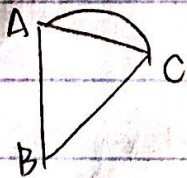
It has 4 vertices of odd degree, so it neither has a Eulerian path nor has Eulerian circuit

$$A_1 = \begin{matrix} & a & b & c & d & e \\ a & 0 & 1 & 1 & 1 & 0 \\ b & 1 & 0 & 1 & 1 & 0 \\ c & 1 & 1 & 0 & 1 & 1 \\ d & 1 & 1 & 1 & 0 & 1 \\ e & 0 & 0 & 1 & 1 & 0 \end{matrix}$$


$$A_2 = \begin{matrix} & a & b & c & d \\ a & 0 & 1 & 1 & 1 \\ b & 1 & 0 & 1 & 1 \\ c & 1 & 1 & 0 & 1 \\ d & 1 & 1 & 1 & 0 \end{matrix}$$

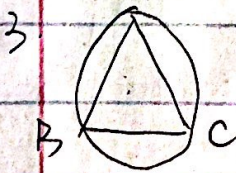
It has odd degree



$$A_3 = \begin{matrix} & a & b & c & d \\ a & 0 & 1 & 1 & 1 \\ b & 1 & 0 & 1 & 0 \\ c & 1 & 1 & 0 & 1 \\ d & 1 & 0 & 1 & 0 \end{matrix}$$


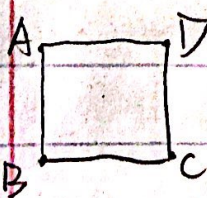
$$A_4 = \begin{bmatrix} 0 & 2 & 2 \\ 2 & 0 & 1 \\ 2 & 1 & 0 \end{bmatrix}$$

There is only two vertex has odd degree



$$A_5 = \begin{bmatrix} 0 & 2 & 2 \\ 2 & 0 & 0 \\ 2 & 2 & 0 \end{bmatrix}$$

Each vertex has even degree



$$A_6 = \begin{bmatrix} 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \\ 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}$$

Each vertex has even degree

4. If Eulerian cycle exist, it is a traversal of all edges of a simple graph once and only once, starting at a vertex and end at the same vertex, thus the edges will be a even number at every point.



5. If a Euler path exist, it travels each edge of a graph exactly once, it arrive at every vertex except starting and ending. It will be an even edges occurred on the vertex. Which means, the starting vertex will be one more time than the vertex, which means, it is an odd number.

