Tutorial - 8. Graphs.

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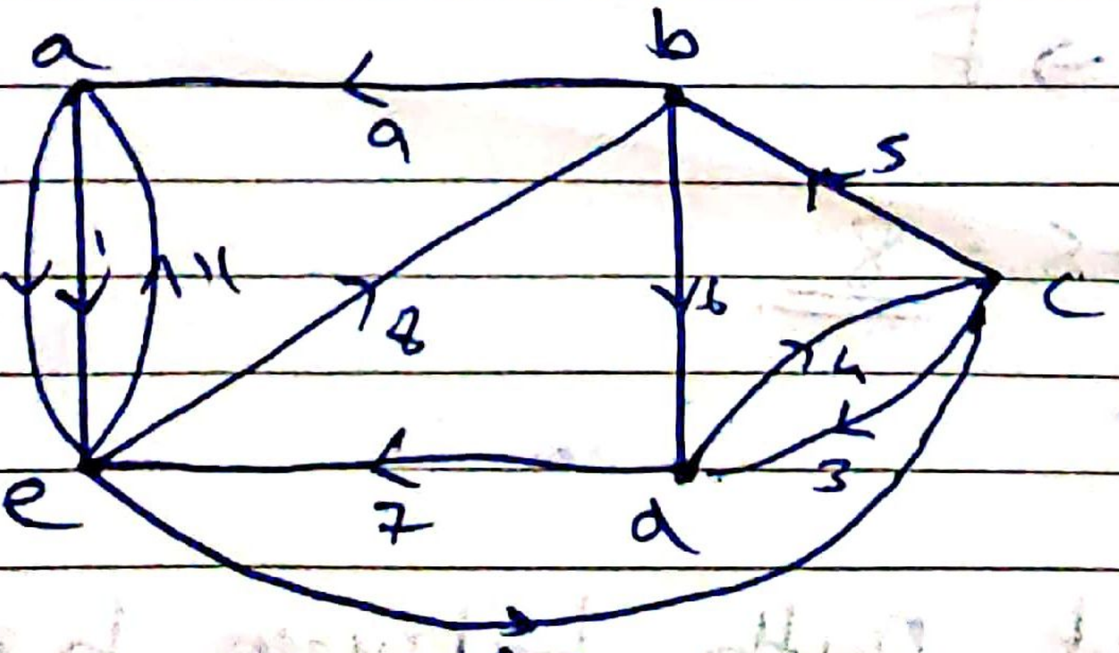
1. (a) Since element 'a' has no outgoing directed connections, the graph is not strongly connected.

but, since the outline of the graph is connected, it is a weakly connected graph.

(b) since the element 'i' has no outgoing directed connections,

similarly the graph is weakly connected

2. (a) following the path.

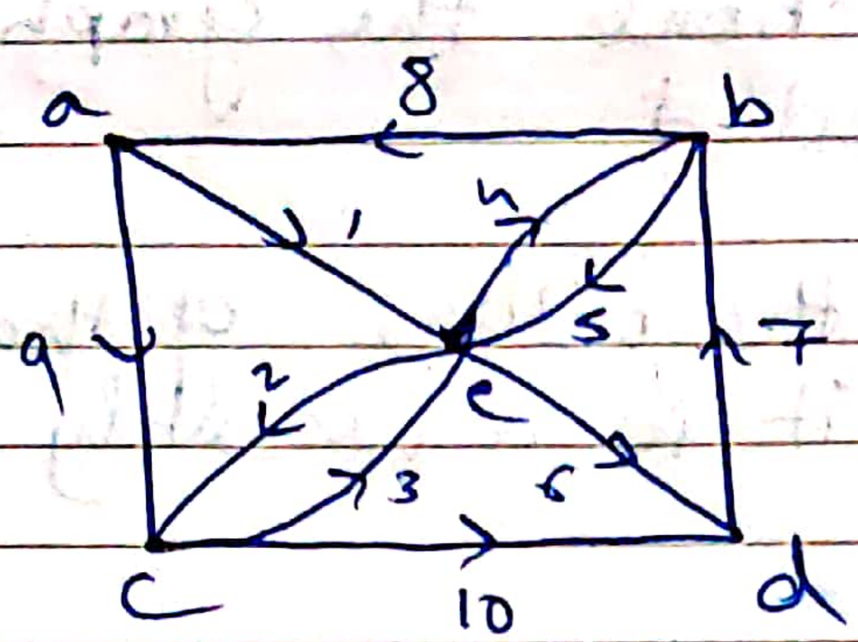


i.e. $a \to e \to c \to d \to e \to b \to d \to e \to b \to a \to e \to a$

we find a <u>euler circuit</u>.

(b) in this graph, a & d have odd degrees thus, no euler circuit can exist.

but the euler path can be traced as follows.



a → e → c → e → b → e → d → b → a → c → d.

3. (a) shortest path between c & f.

the shortest path between c & f is c → d → f

i.e. 3+5 = 8

(b) shortest path between b & z is

b → d → e → g → z

i.e. 5+1+5+4 = 15

4. The given graph is not planar as a $K_{3,3}$ graph can be formed with $\{a, d, F\}$ and $\{b, c, e\}$.