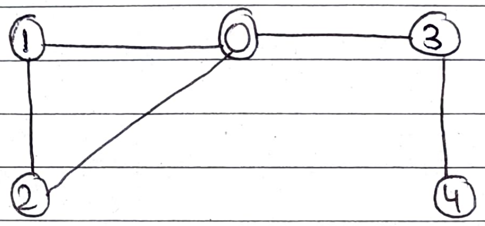
Day - 213

Graph - 17

* Euler Path:

⇒ It is a path in a group that visit every edge exactly once.



⇒ So, for example, we use above exampde then — best path or euler path is

0 → 2 → 1 → 0 → 3 → 4

or 0 → 1 → 2 → ~~3~~ 0 → 3 → 4

* Euler Circuit:

⇒ Euler circuit is like euler cycle.

⇒ In the euler circuit, we have find out the path that contain euler path and starting verdext is same as ending vertex.

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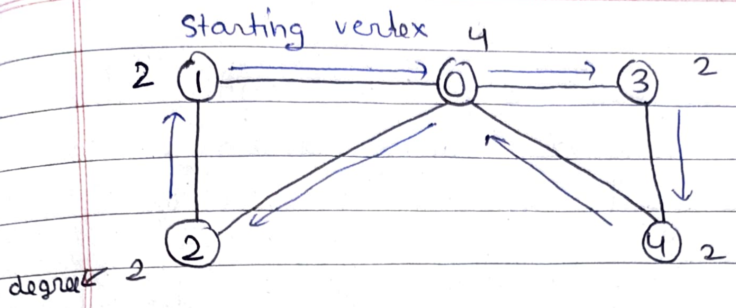


⇒ There is a property of euler circuit that if we change the source vertext then also euler circuit will present.

⇒ But this is not valid for euler path.

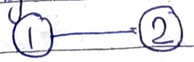
⇒ Now, how to know or find euler circuit by code.

⇒ For that, we have find a pattern that if a graph ~~for~~ is euler circuit then its degree will be even.

Degree: No. of incoming edges.

⇒ why?

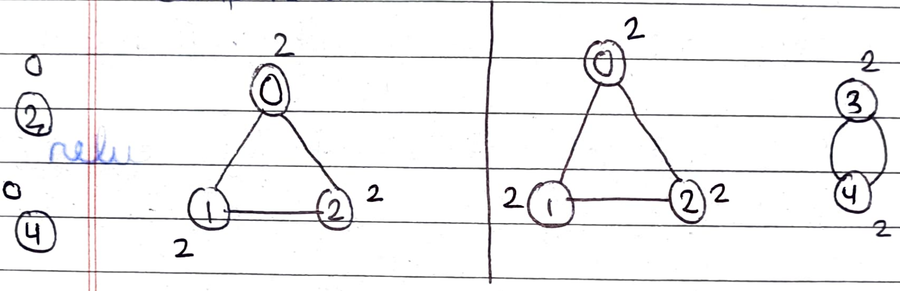
⇒ Suppose if we have two nodes like



⇒ But we want to get back to the 1 then there should be apath —

⇒ So, if one edge is coming then there should be one edge ~~coming~~ going out from the vertex.

⇒ 2nd condition is that all the edges ~~are~~ should be part of single component.



EC ✓ EC X

⇒ In Euler path, there can be two nodes that have odd degree.

Steps:

⇒ Find degree of each node.

⇒ If degree of any node is odd, not a EC.

⇒ If all even then —

→ Apply DFS, from any non-zero degree node.

→ Then make a visite array.

→ After that if any degree of node have visited value 0 that means the graph is not euler circuit.

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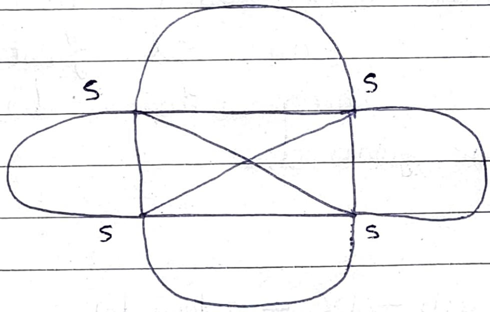
⇒ If the node have degree 0 then we don't have to check.

⇒ So, we can say, euler ~~E~~ circuit can have euler path but vice versa is not true.

EC → EP ✓

but EP → EC ✗

⇒



⇒ So, we have make this figure without taking off the pen from the copy.

⇒ But this is not possible because this is not a eulerian path or circuit.