

GRAPH Concepts



& Questions ...

{
@codestorywithmik
(Instagram, Facebook)
cswithMIK → Twitter



• "Coding is NOT about being the **BEST**; it's about becoming **BETTER** than you were **YESTERDAY**"

• "The HARDER you work for something, the GREATER you'll feel when you ACHIEVE it."



• "Success is not about destination; it's about the

JOURNEY.



EULER HTS

PART- 1

★ Eulerian Path

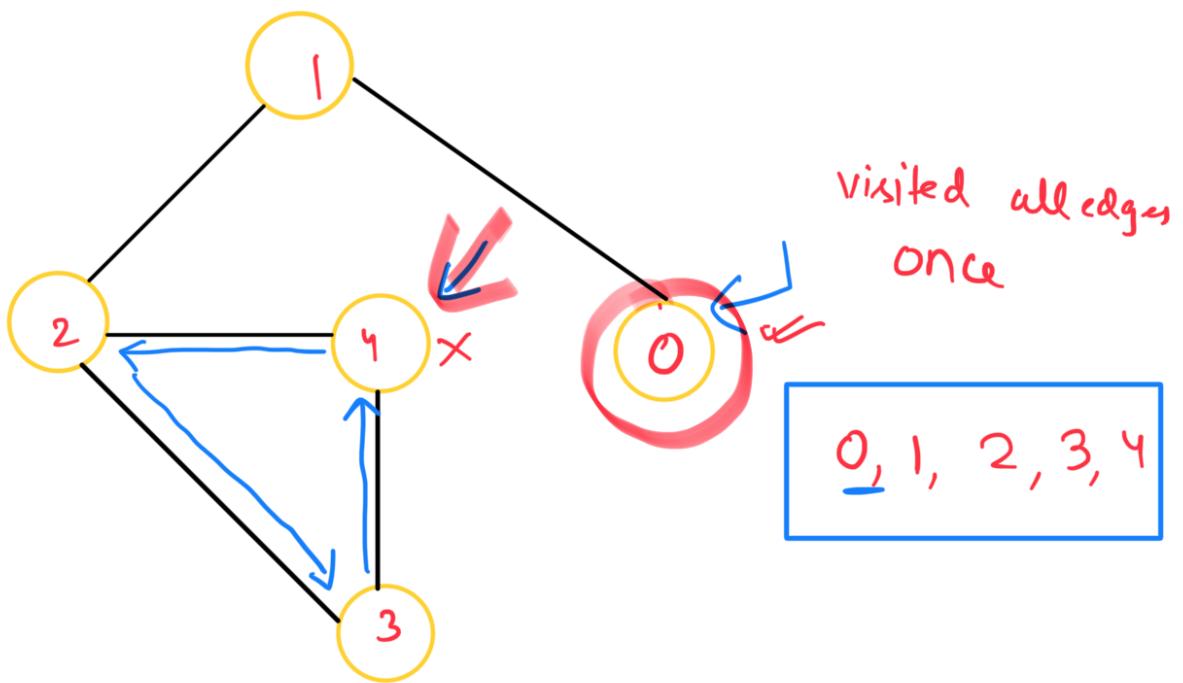
A path of edges that visits

~~all~~ the edges

in a graph

exactly

Once.



→ Not all Graphs have Eulerian Path.

→ Be careful from which node you

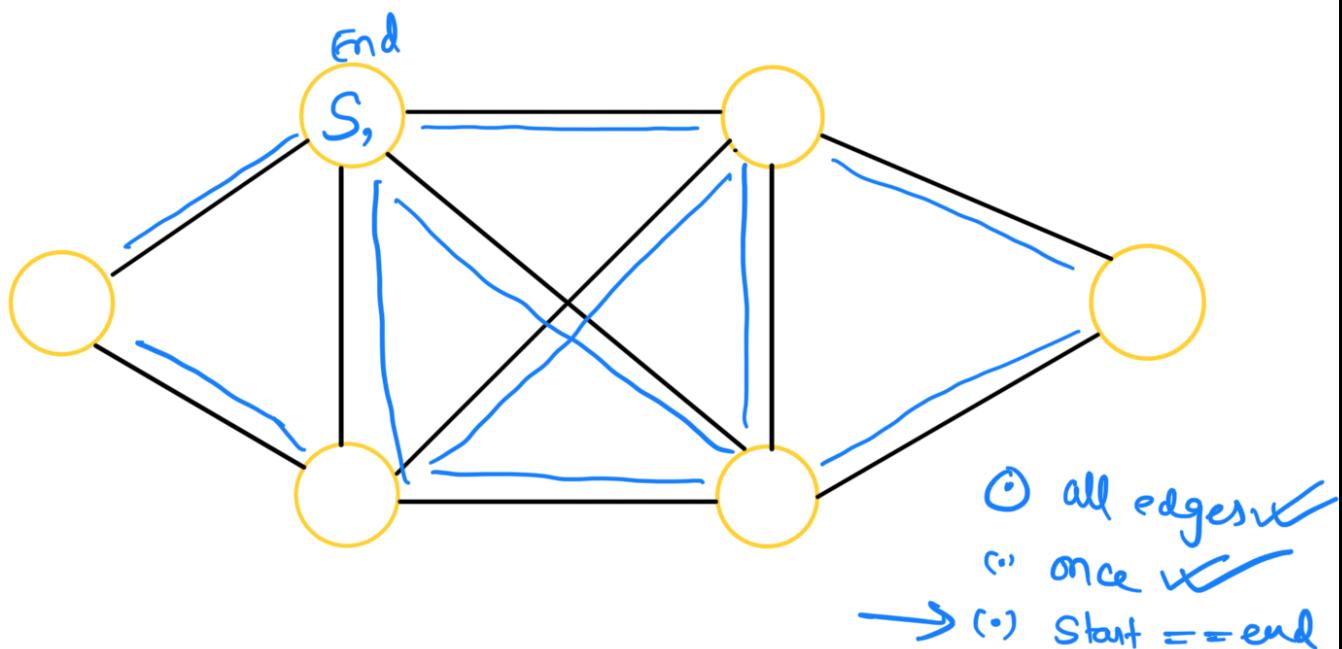
start your Eulerian Path

Find your Eulerian path.

★ Eulerian Circuit

An Eulerian Path which
starts and ends on the same node.

Also known as "Eulerian Cycle".



Note :-

→ Not all Graphs have Eulerian Circuit.

→ If the Graph has Eulerian Circuit,

then you can start your path/circuit

from any node.

→ If the Graph does not have

Eulerian Circuit :-

✗ ① All edges
↓
one edge

✗ ② $S = E$

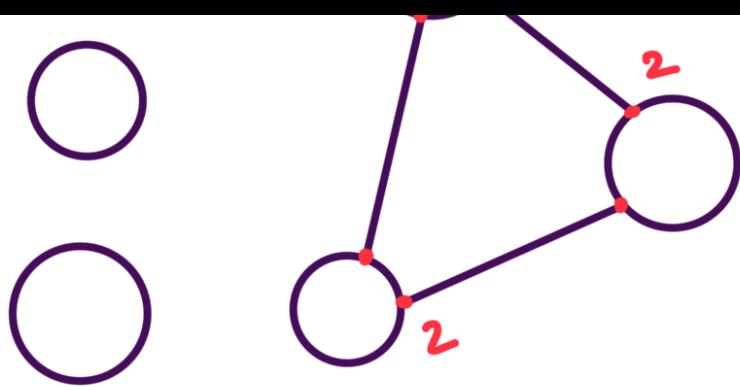
Either you won't be able
to come back to the start
node.

Or, you will not be able
to visit all edges of graph.

Given Graph Euler Path



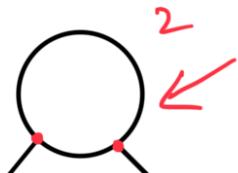
- ∴ ① Euler Path
- ∴ ② Eulerian Circuit



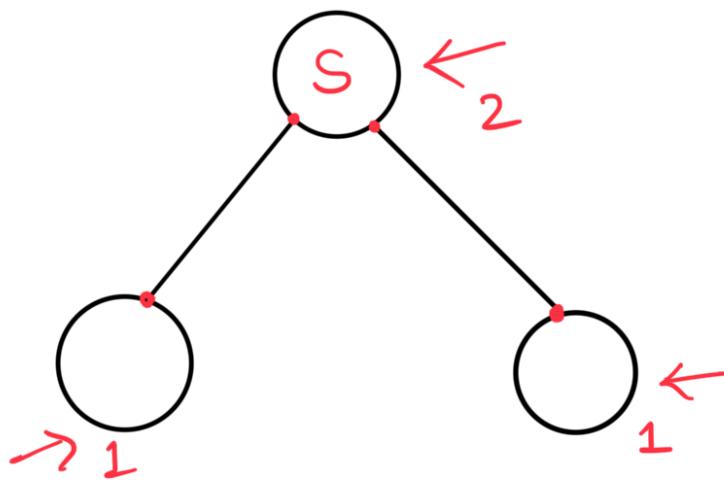
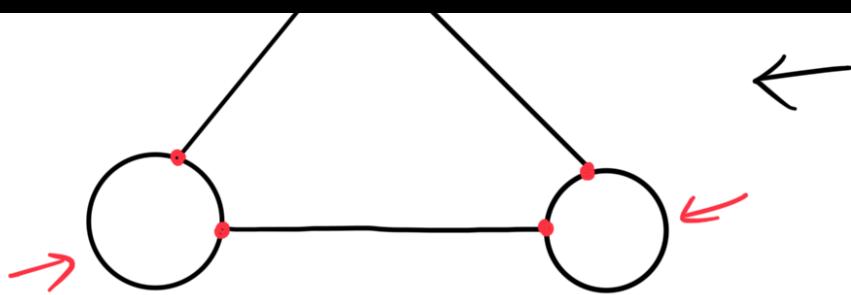
- (i) All edges ~~w~~
 - (ii) Once ~~w~~
 - (iii) $S = \infty$

(.) All vertices with non-zero degree MUST belong to a single connected component.

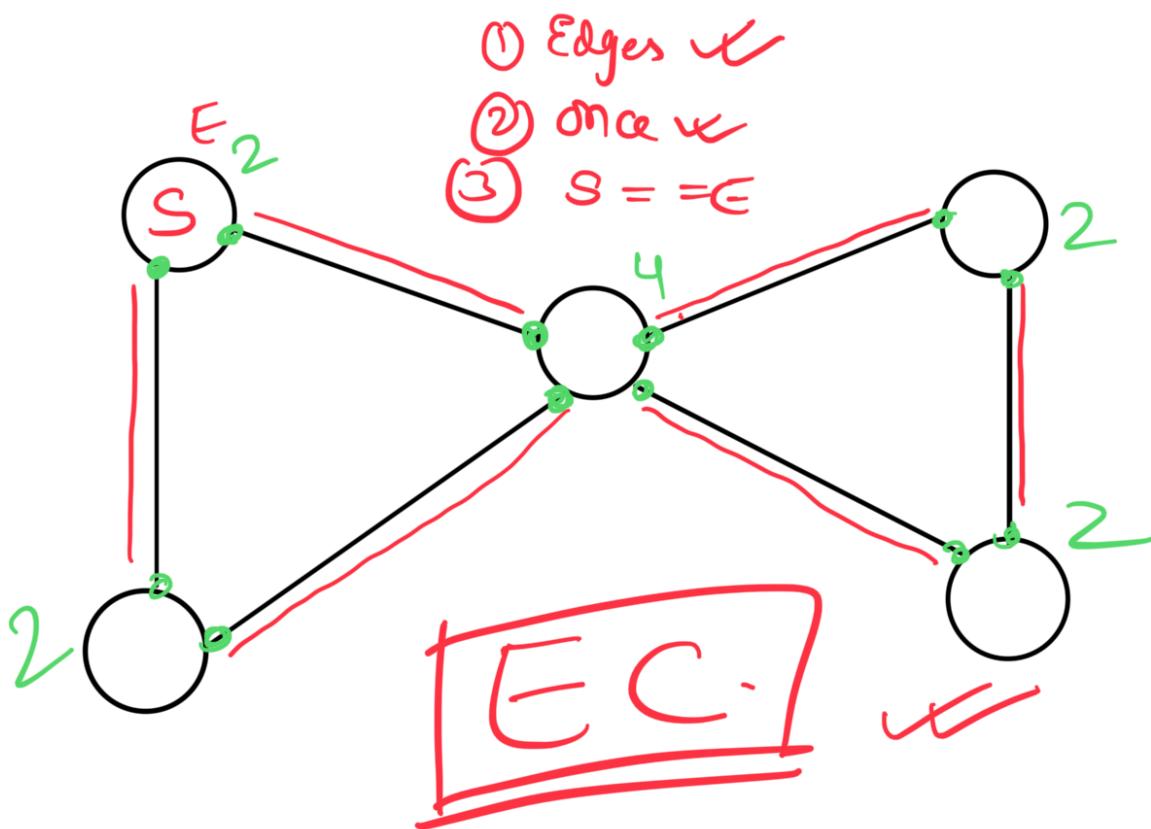
Degree का काम



- (\wedge) all edges once
 - (\vee) $s = \infty$



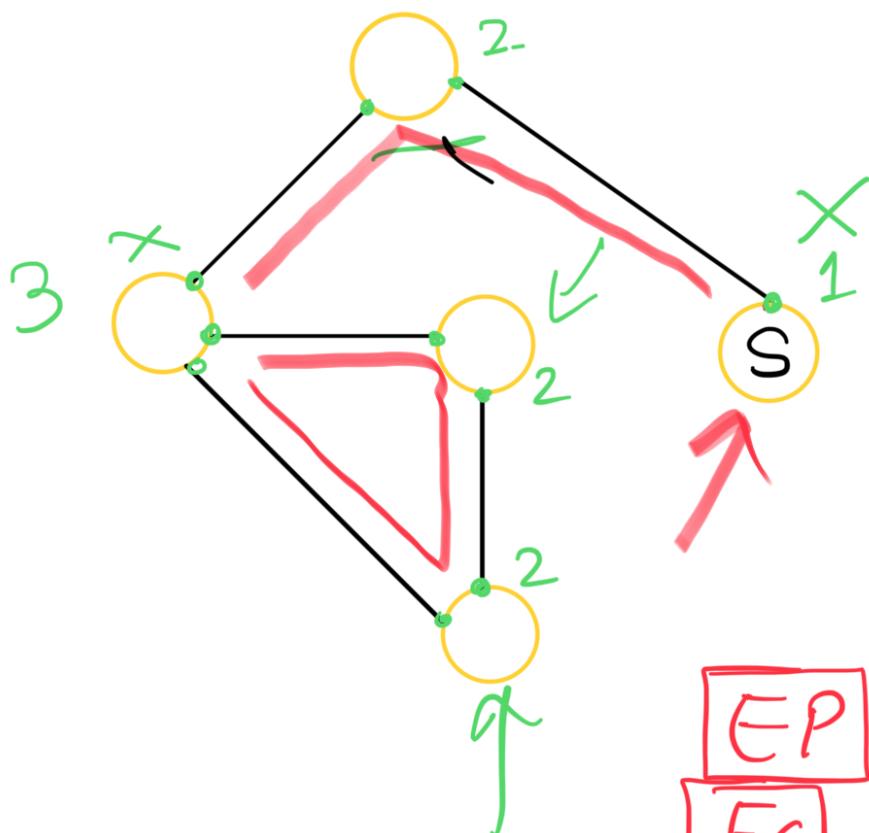
"All vertices have even degrees"
"Eulerian Circuit"



"Even degree node"



of all
Vertex."



EP✓
Ec✗

① edges all
once

② $S = E$

EP✓
Ec✗

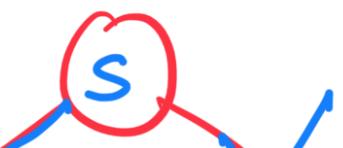
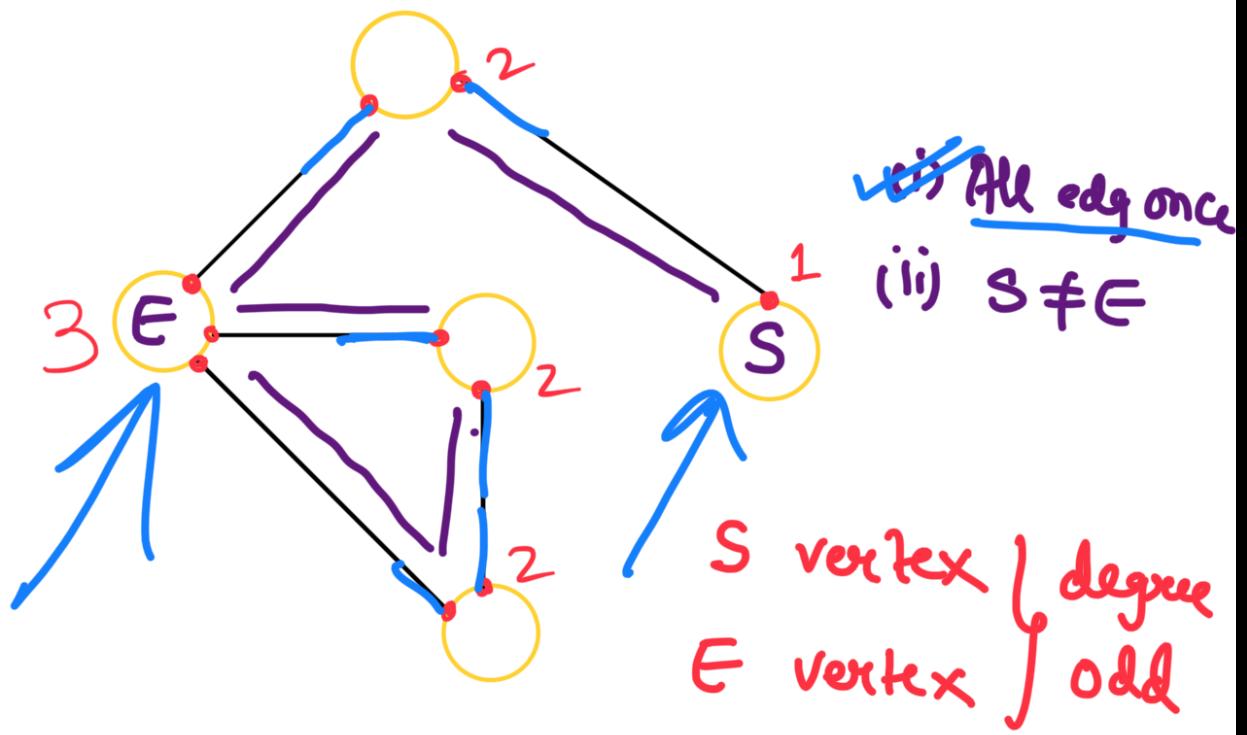
~~✓~~ Semi-Eulerian Graph:

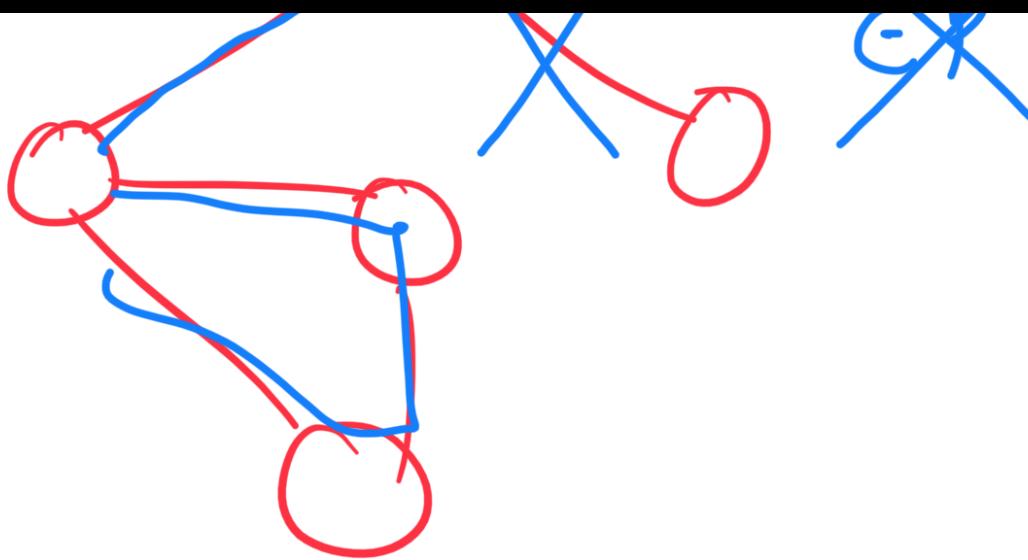
↳ EP✓
↳ Ec✗

~~✓~~ Eulerian Graph: $S = E$
= EP Ec

Semi-Eulerian Graph:-

↳ EP → (i) All edges once visited
↳ ECX (ii) $S \neq E$





① $E \cdot P = (\text{Semi-Eulerian Graph})$

$(S \rightarrow$ degree odd $)$

② $E \cdot C = \text{Eulerian Graph}$

All nodes - degree Even

S ($\leq = E$).

① Check if the Graph
is ① Eulerian
② Semi-Eulerian
③ Non-Eulerian

② Find the Eulerian
Path/ in the Graph.
Circuit.