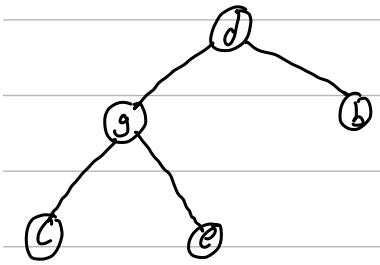
Lecture 26

3 ways to traverse binary tree.

1. Pre-Order (In RA notes)
2. In-Order
3. Post-order (In RA notes)

In-Order



print c, g, e, d, b

- Minimum Spanning Tree (MST)

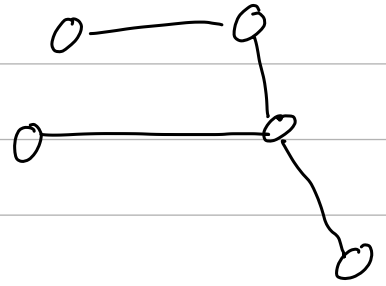
Ex Given a graph G where the minimum-weight edge is unique, prove by contradiction that the minimum-weight edge must be part of all MSTs of G.

e_{min} is min-weight edge

$\forall T \in MST \quad e_{min} \in T$

$\neg(\forall T \in MST \quad e_{min} \in T)$

$\exists T \in MST \quad \neg e_{min} \in T$ → $T \cup \{e_{min}\}$



This is a MST

- Now imagine adding e_{min}
  - ↳ we form a cycle
    - ↳ remove an arbitrary $e^?$ since that will form an MST with with lower weight.
  - ↳ This is a contradiction.

Final Exam

- Proof By Induction (All types)
- Another type of proof will be there related to graphs/trees
- Review composition of functions.
- Graph Power may be on it. G^+
- Solving recurrances may be on there
- Integer Division Property $x = (\text{quotient}) \cdot d + (\text{remainder})$
- Counting Question
  - ↳ Product Rule
  - ↳ Sum Rule
  - ↳ Bar and Stars
  - ↳ K-to-1 rule
  - ↳ DONUT PROBLEM
  - ↳ Count by Complement

- Probability
  - ↳ Expected Value
  - ↳ lowkey All probability

- Graphs
- Trees