25.4 Chapter Summary

In this chapter, we learned about Minimum Spanning Trees and the Cut Property:

- **MST:** the lightest set of edges in a graph possible such that all the vertices are connected and acyclic.
- **The Cut Property**: given any cut, the minimum weight crossing edge is in the MST.
  - *Cut*: an assignment of a graph's nodes to two non-empty sets
  - *Crossing Edge:* an edge which connects a node from one set to a node from the other set.

We also learned about how to find MSTs of a graph with two algorithms:

- **Prim's Algorithm**: Construct MST through a mechanism similar to Dijkstra's Algorithm, with the only difference of inserting vertices into the fringe not based on distance to goal vertex but distance to the MST under construction.
  - *Runtime*: $O((|V| + |E|)log(|V|))$
- **Kruskal's Algorithm**: Construct MST by first sorting edges from lightest to heaviest, then add edges sequentially if no cycles are formed until there are V - 1 edges.
  - Runtime:
    - $O(|E|log|E|)$ (unsorted edges)
    - $O(|E|log * |V|)$ (sorted edges)

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