



CIT 596

Depth-First Search

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EXPLORING GRAPHS

- If we have a graph, we want to be able to explore it in some sensible, comprehensive way.
- There are important methods for this:
 - Depth-first search (DFS)
 - Breadth-first search (BFS)
- Suppose you are exploring a neighborhood in a new city:
 - You might walk as far as you can down each path, turning around when stuck (DFS)
 - You might only explore nearby spots before venturing further (BFS)

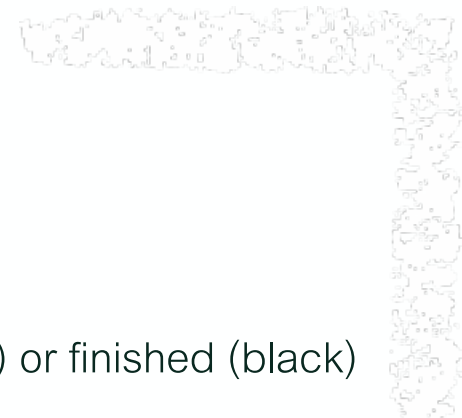
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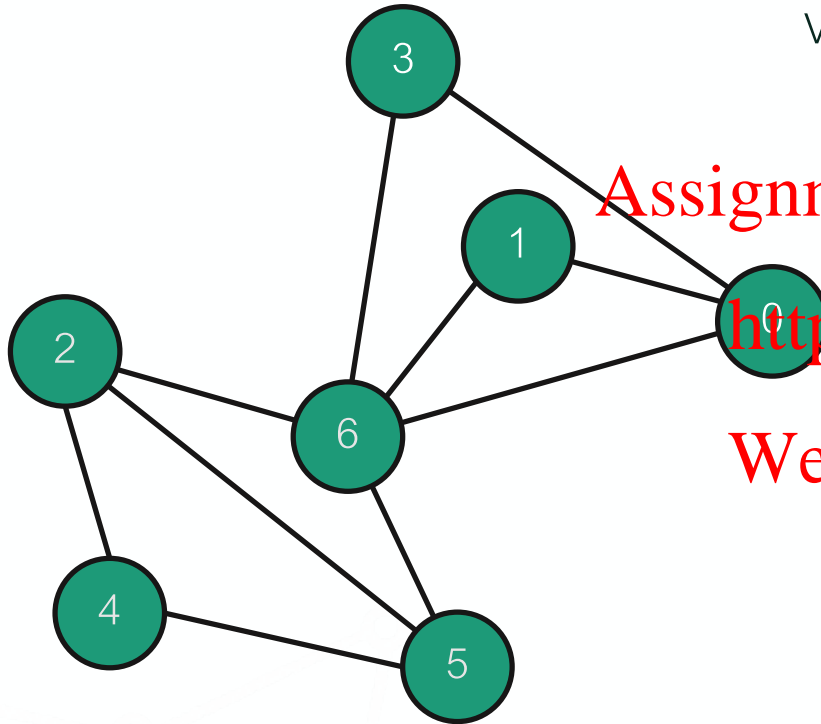
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DFS DETAILS



Vertices either unseen (light green), visited (dark green) or finished (black)



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```
// all vertices start unseen
```

```
DEPTH-FIRST-SEARCH(G):
```

```
    while there is an unseen vertex v
```

```
        DFS(v)
```

```
DFS(v):
```

```
    mark v as visited
```

```
    while there is an unseen neighbor u of v
```

```
        DFS(u)
```

```
    mark v as finished
```