

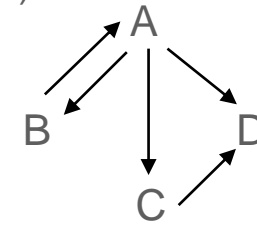
[320] Graph Search

Department of Computer Sciences
University of Wisconsin-Madison

Tracing DFS

```
def find(self, dst):  
    self.graph.visited.add(self)  
  
    if self == dst:  
        return (self.name,)  
  
    for child in self.children:  
        if not child in self.graph.visited:  
            childpath = child.find(dst)  
            if childpath:  
                return (self.name,) + childpath  
  
    return None
```

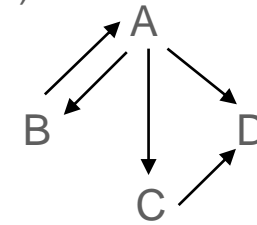
A.find(D)



Tracing DFS

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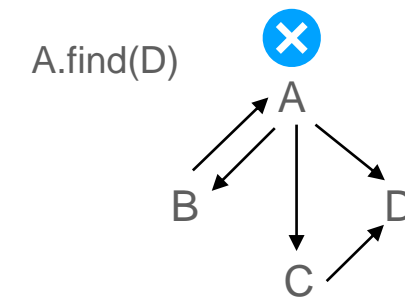
A.find(D)



A.find(D) =

Tracing DFS

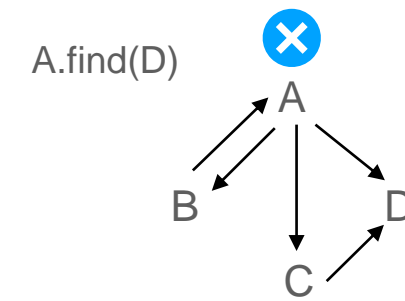
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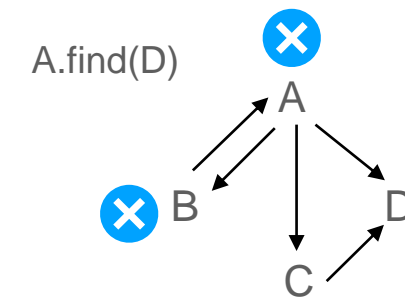


A.find(D) =

B.find(D) =

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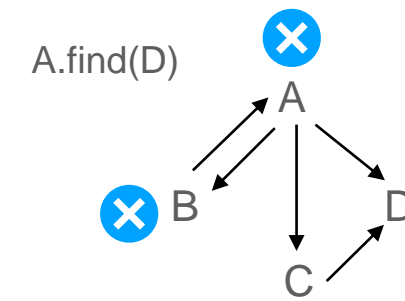


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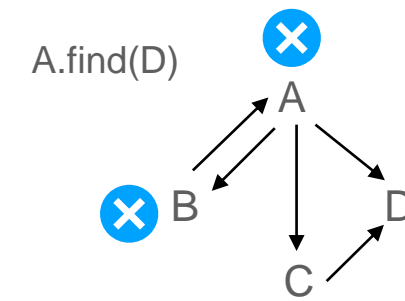


A.find(D) =

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Tracing DFS

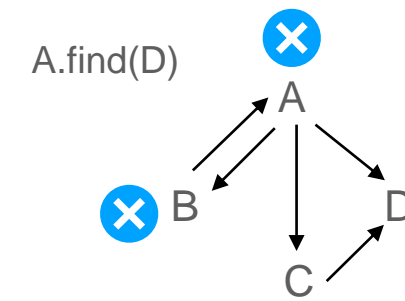
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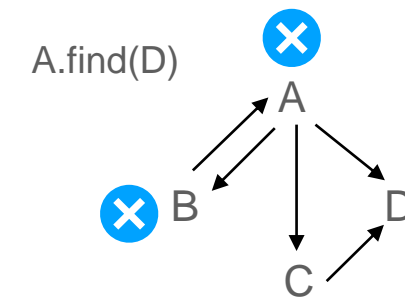
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            if childpath:
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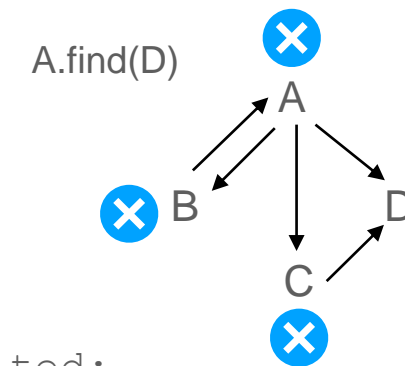
A.find(D) =

⊗ B.find(D) = None

C.find(D) =

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A.find(D) =
⊗ B.find(D) = None
C.find(D) =

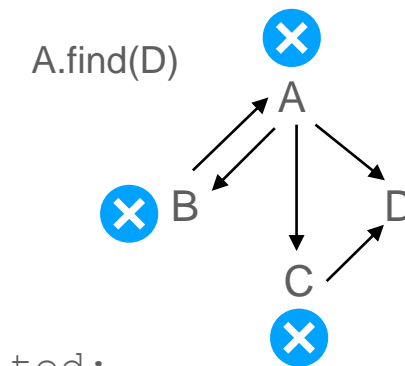
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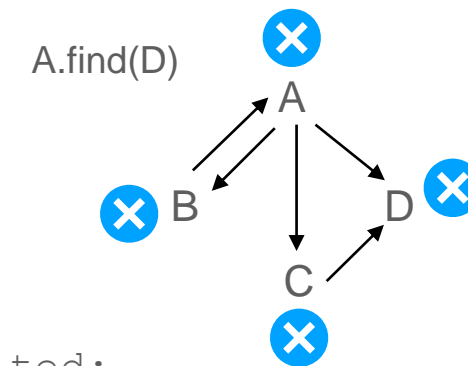
    return None
```



A.find(D) =
X B.find(D) = None
C.find(D) =
D.find(D) =

Tracing DFS

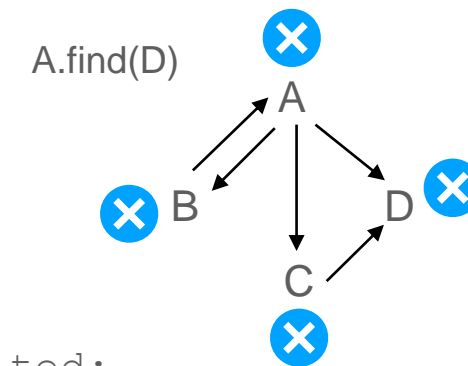
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✕ B.find(D) = None
C.find(D) =
D.find(D) =

Tracing DFS

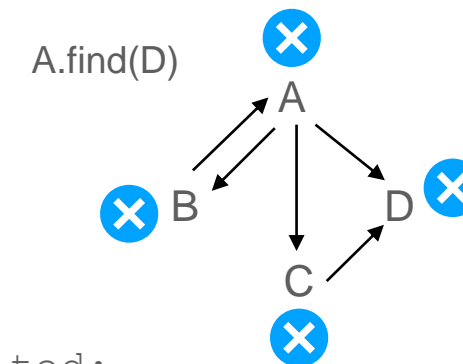
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A.find(D) =
✕ B.find(D) = None
C.find(D) =
D.find(D) = (D,)

Tracing DFS

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            childpath = child.find(dst)  
            if childpath:  
                return (self.name,) + childpath  
  
    return None
```



A.find(D) =

⊗ B.find(D) = None

C.find(D) = (C, D)

D.find(D) = (D,)

where (C, D) = (C,) + (D,)

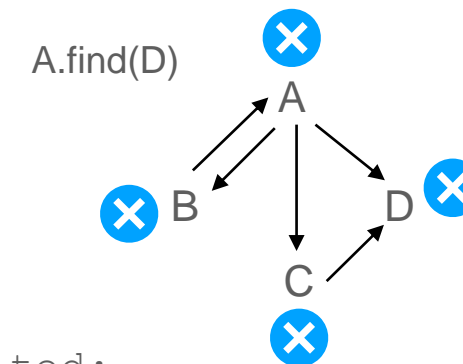
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            childpath = child.find(dst)
            if childpath:
                return (self.name,) + childpath

    return None
```



A.find(D) = (A, C, D)

⊗ B.find(D) = None

C.find(D) = (C, D)

D.find(D) = (D,)

where (A, C, D) = (A,) + (C, D)