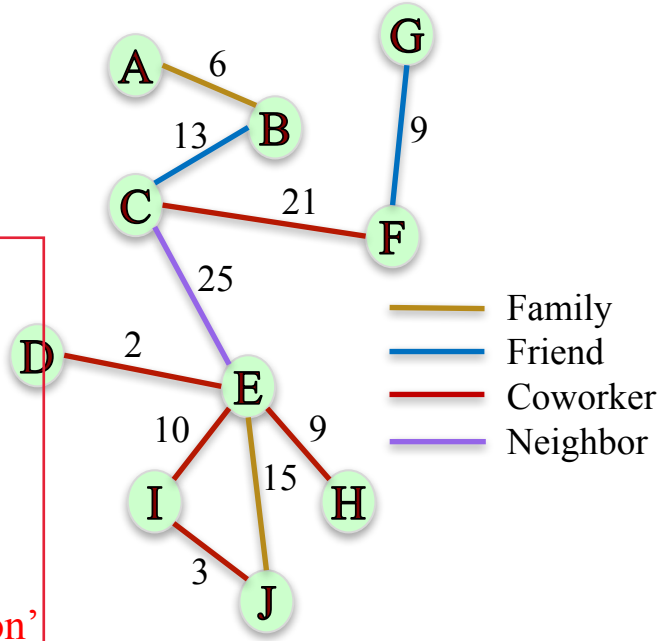
Edge Attributes in NetworkX

```
G=nx.Graph()
G.add_edge('A','B', weight= 6, relation = 'family')
G.add_edge('B','C', weight= 13, relation = 'friend')
```

```
In: G.edges() #list of all edges
Out: [('A', 'B'), ('C', 'B')]

In: G.edges(data= True)  #list of all edges with attributes
Out: [('A', 'B', {'relation': 'family', 'weight': 6}),
('C', 'B', {'relation': 'friend', 'weight': 13})]

In: G.edges(data= 'relation') #list of all edges with attribute 'relation'
Out: [('A', 'B', 'family'), ('C', 'B', 'friend')]
```

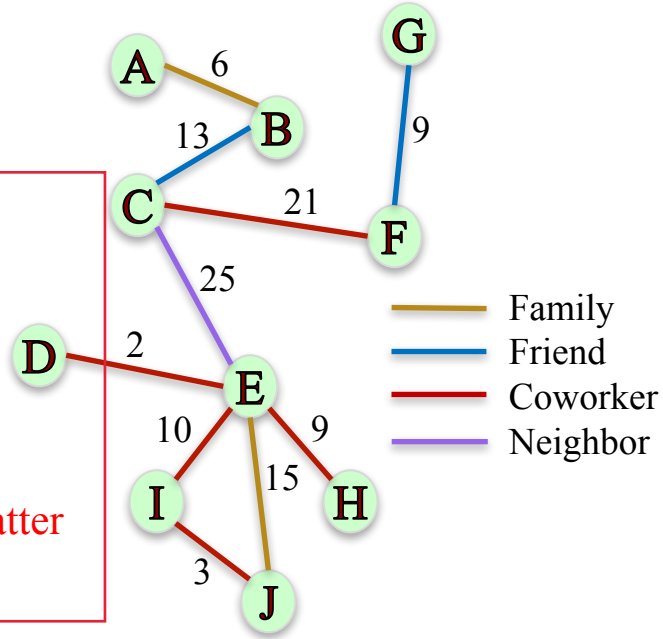


Number of times coworkers had lunch together in one year

Edge Attributes in NetworkX

Accessing attributes of a specific edge:

```
In: G.edge['A']['B'] # dictionary of attributes of edge (A, B)
Out: {'relation': 'family', 'weight': 6}

In: G.edge['B']['C']['weight']
Out: 13

In: G.edge['C']['B']['weight'] # undirected graph, order does not matter
Out: 13
```



Number of times coworkers had lunch together in one year

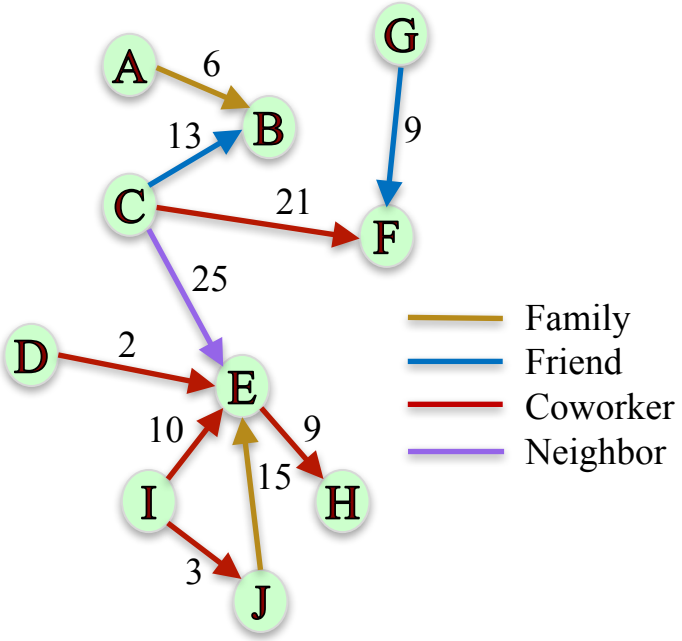
Edge Attributes in NetworkX

Directed, weighted network:

```
G=nx.DiGraph()
G.add_edge('A','B', weight= 6, relation = 'family')
G.add_edge('C', 'B', weight= 13, relation = 'friend')
```

Accessing edge attributes:

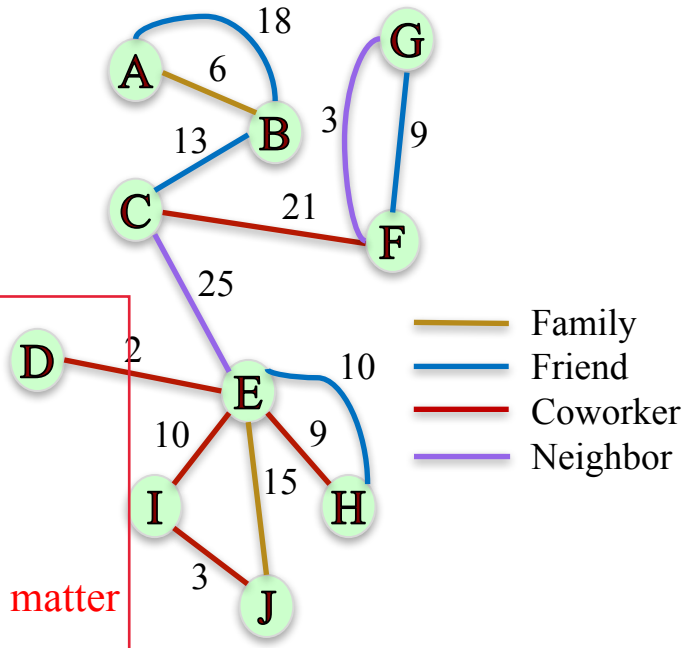
```
In: G.edge['C']['B']['weight']
Out: 13

In: G.edge['B']['C']['weight'] # directed graph, order matters
Out: KeyError: 'C'
```



Edge Attributes in NetworkX

MultiGraph:

```
G=nx.MultiGraph()
G.add_edge('A','B', weight= 6, relation = 'family')
G.add_edge('A','B', weight= 18, relation = 'friend')
G.add_edge('C','B', weight= 13, relation = 'friend')
```



Accessing edge attributes:

```
In: G.edge['A']['B'] # One dictionary of attributes per (A,B) edge
Out: {0: {'relation': 'family', 'weight': 6},
1: {'relation': 'friend', 'weight': 18}}

In: G.edge['A']['B'][0]['weight'] # undirected graph, order does not matter
Out: 6
```

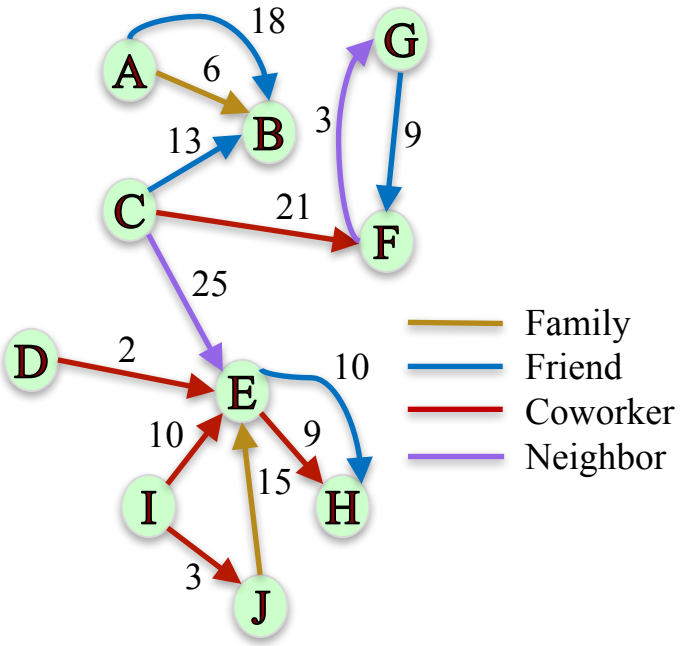
Edge Attributes in NetworkX

Directed MultiGraph:

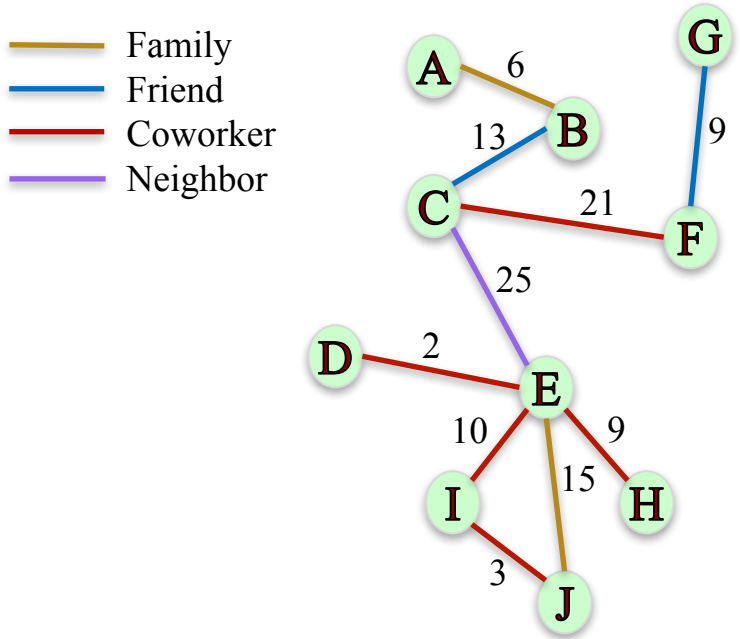
```
G=nx.MultiDiGraph()
G.add_edge('A','B', weight= 6, relation = 'family')
G.add_edge('A','B', weight= 18, relation = 'friend')
G.add_edge('C','B', weight= 13, relation = 'friend')
```

Accessing edge attributes:

```
In: G.edge['A']['B'][0]['weight']
Out: 6

In: G.edge['B']['A'][0]['weight'] # directed graph, order matters
Out: KeyError: 'A'
```



Node Attributes in NetworkX



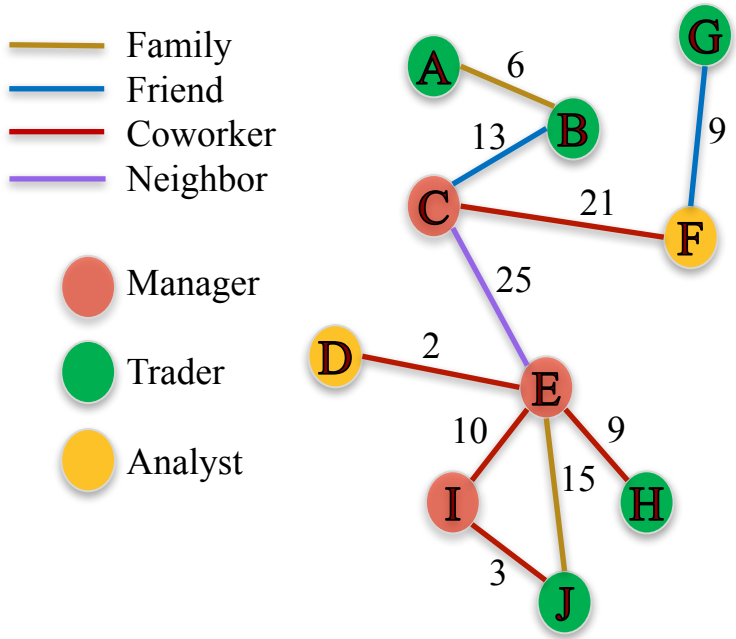
Number of times coworkers had lunch together in one year

Node Attributes in NetworkX

```
G=nx.Graph()
G.add_edge('A','B', weight= 6, relation = 'family')
G.add_edge('B','C', weight= 13, relation = 'friend')
```

Adding node attributes:

```
G.add_node('A', role = 'trader')
G.add_node('B', role = 'trader')
G.add_node('C', role = 'manager')
```



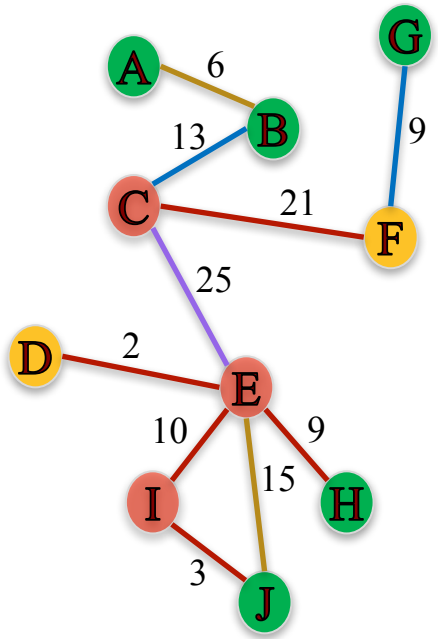
Number of times coworkers had lunch together in one year

Node Attributes in NetworkX

```
G=nx.Graph()
G.add_edge('A','B', weight= 6, relation = 'family')
G.add_edge('B','C', weight= 13, relation = 'friend')
```

Family
Friend
Coworker
Neighbor

Manager
Trader
Analyst



Number of times coworkers had lunch together in one year

Accessing node attributes:

```
In: G.nodes() # list of all nodes
Out: ['A', 'C', 'B']
In: G.nodes(data= True) #list of all nodes with attributes
Out: [('A', {'role': 'trader'}), ('C', {'role': 'manager'})
, ('B', {'role': 'trader'})]
In: G.node['A']['role']
Out: 'manager'
```

Summary

Adding node and edge attributes:

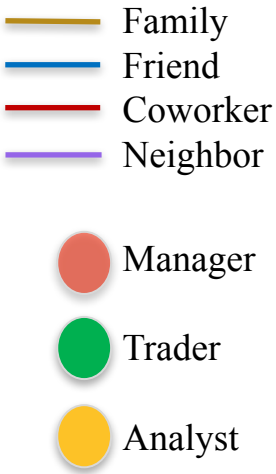
```
G=nx.Graph()
G.add_edge('A','B', weight= 6, relation = 'family')
G.add_node('A', role = 'trader')
```

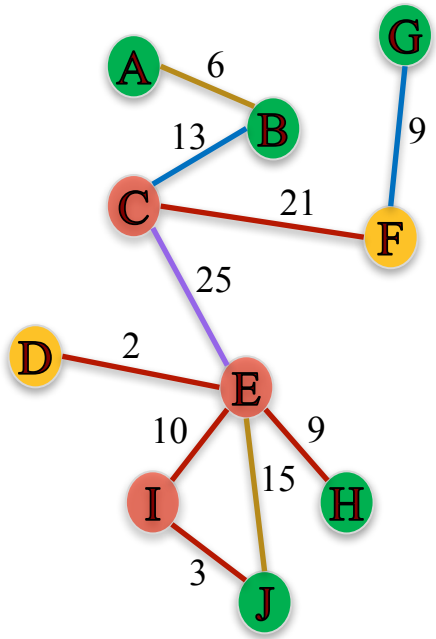
Accessing node attributes:

```
G.nodes(data= True) #list of all nodes with attributes
G.node['A']['role'] #role of node A
```

Accessing Edge attributes:

```
In: G.edges(data= True)  #list of all edges with attributes
In: G.edges(data= 'relation') #list of all edges with attribute 'relation'
G.edge['A']['B']['weight'] # weight of edge (A,B)
```





Number of times coworkers had lunch together in one year