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SMA_LAB ASSIGNMENT-1

Importing

In [4]:
```
import networkx as nx
```

In [5]:
```
G = nx.Graph()
```

In [6]:
```
print(G.nodes()) # returns a list
print(G.edges())
```

```
[]
[]
```

In [8]:
```
G.add_node("A")
```

In [9]:
```
G.add_nodes_from(["B","C","D","E"])
```

In [10]:
```
G.add_edge(*("A","B"))
```

In [11]:
```
G.add_edges_from([("A","C"), ("B","D"), ("B","E"), ("C", "E")])
```

Accessing vertex and edge sets

In [12]:
```
print("Vertex set: ",G.nodes())
```

```
Vertex set:  ['A', 'B', 'C', 'D', 'E']
```

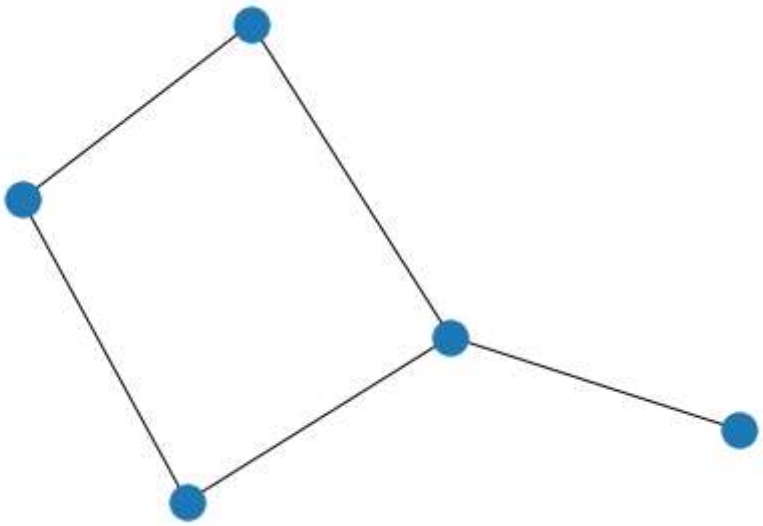
In [13]:
```
print("Edge set: ",G.edges())
```

```
Edge set:  [('A', 'B'), ('A', 'C'), ('B', 'D'), ('B', 'E'), ('C', 'E')]
```

Drawing graph

In [14]:
```
import matplotlib.pyplot as plt
```

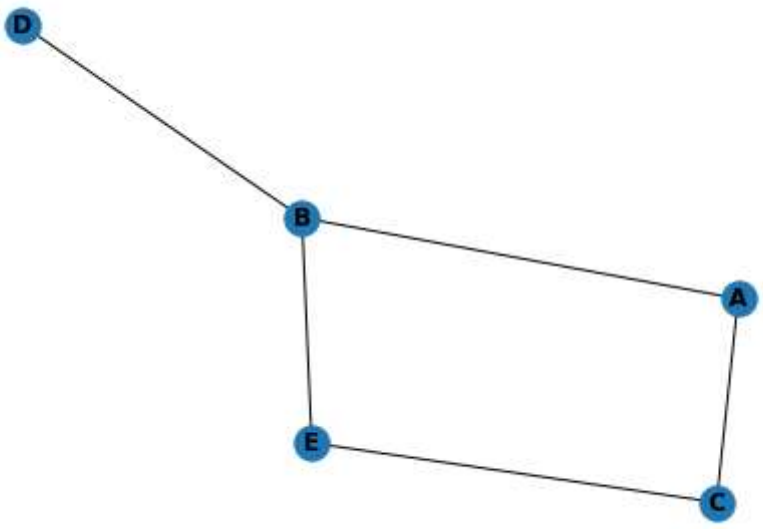
In [15]:
```
nx.draw(G)
plt.show()
```



In [18]:
```
plt.savefig("graph.png")
```

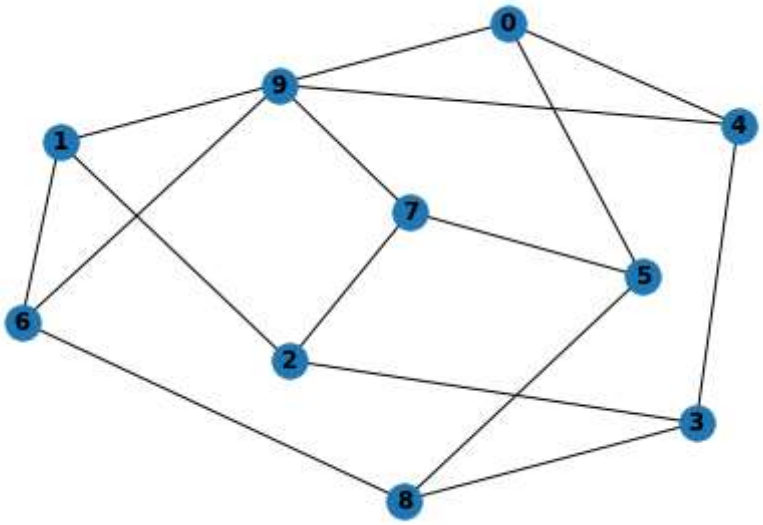
```
<Figure size 432x288 with 0 Axes>
```

In [20]:
```
nx.draw(G, with_labels=True, font_weight='bold')
plt.show()
```



In [21]:
```
GP = nx.petersen_graph()
```

In [23]:
```
nx.draw(GP, with_labels=True, font_weight='bold')
plt.show()
```



Adjacency view

In [24]:
```
print(G.adj)
```

```
{'A': {'B': {}, 'C': {}}, 'B': {'A': {}, 'D': {}, 'E': {}}, 'C': {'A': {},
'E': {}}, 'D': {'B': {}}, 'E': {'B': {}, 'C': {}}}
```

Degree of a vertex

In [25]:
```
G.degree("A")
```

Out[25]: 2

Creating weighted graph

In [27]:
```
G = nx.Graph()
E = [('A', 'B', 2), ('A', 'C', 1), ('B', 'D', 5), ('B', 'E', 3), ('C', 'E', 2)
G.add_weighted_edges_from(E)
```

In [29]:
```
pos=nx.spring_layout(G)
nx.draw(G, pos, with_labels=True, font_weight='bold')
edge_weight = nx.get_edge_attributes(G,'weight')
nx.draw_networkx_edge_labels(G, pos, edge_labels = edge_weight)
plt.show()
```