**Riley Payung**

**CDS 292**

**Assignment 1**

# Imports

In [10]:

```python
import matplotlib.pyplot as plt
import numpy as n
```

# Question 1 - Book Questions

### Q2

Cardinality of Presidents is 45.

### Q3

V(G) = {4,3,2,1}

E(G) = {(4,3),(3,1),(3,2),(2,1)}

### Q4

V(G) = {1,2,3,4,5,6}

E(G) = {(1,2),(2,3),(3,4),(4,5),(5,6),(6,1)}

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**Q5**

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**Q6**

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**Q7:**

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In [123]:

```python
lis = [5,10,15,20];
# The number of edges is 10,45,105,190 respectively
def fx(n):
    ls = [];
    for i in n:
        ls.append(((i*(i-1)) / 2));
    return ls;
ls = fx(lis);
plt.plot(lis,ls,marker='o')
plt.title("Number of Edges based on Number of Nodes");
plt.xlabel("Number of Nodes");
plt.ylabel("Number of Edges");
plt.yticks(n.arange(0,201,25))
plt.xticks(n.arange(5,21,5))
plt.xlim(4,23);
for i in range(len(lis)):
    plt.text(lis[i] + 0.6,ls[i],str(ls[i]),weight="bold")
plt.show()
```
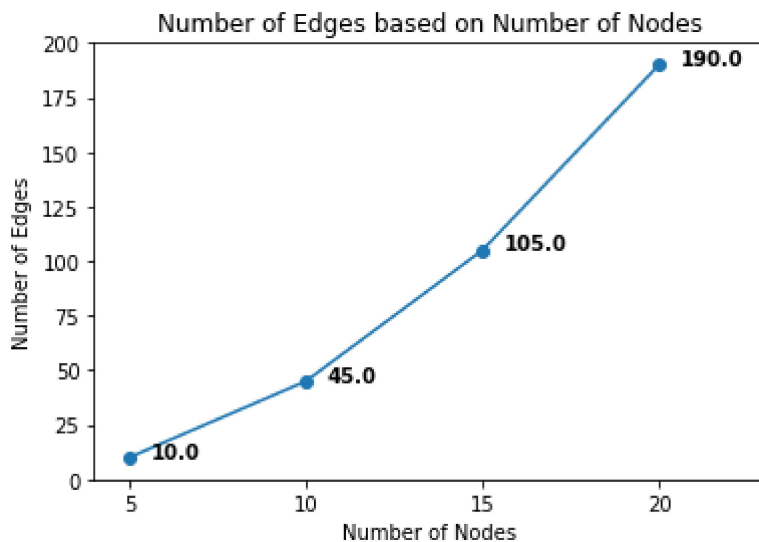


# Question 2

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In [122]:

```python
primes = [];
primeFinder = False;
for i in range(100,250):
    if (i % 2 == 0):
        continue;
    else:
        # Since a prime is divisible by any number other than 1 and itself:
        for j in range(2, i):
            primeFinder = True;
            if (i % j == 0):
                primeFinder = False;
                break;
        if (primeFinder):
            primes.append(i);
            primeFinder = False
```

In [4]:

```python
print(primes[:5]);
```

```
[101, 103, 107, 109, 113]
```

## Question 3

In [119]:

```python
fib = [0,1];
for i in range(2,20):
    fib.append(fib[i-2] + fib[i-1]);
fibcount = 0;
for i in range(len(primes)):
    for j in range(len(fib)):
        if (fib[j] == primes[i]):
            print('Number in Fib Seq:',primes[i]);
            fibcount = fibcount + 1;
            break;
if (fibcount > 0):
    print(fibcount);
else:
    print('There are no fibonacci numbers in the primes list.')
```
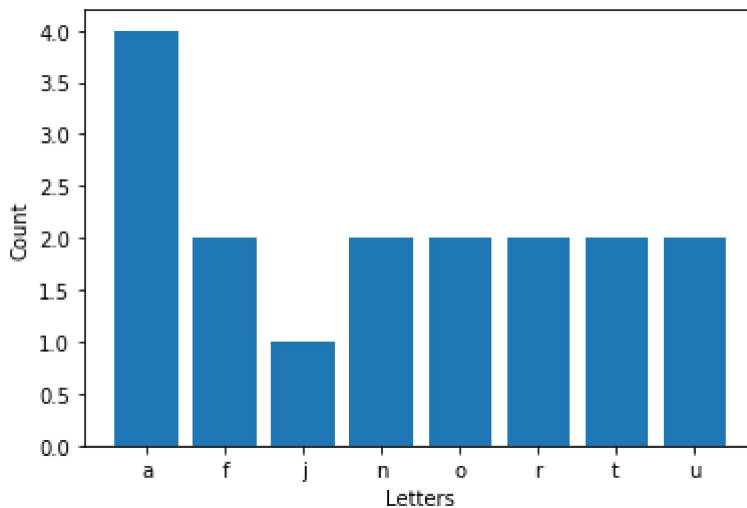
```
Number in Fib Seq: 233
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```

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2/11/2020

# Question 4

In [121]:

```python
palindrome = 'a nut for a jar of tuna';
histList = n.zeros(26);
l = ['a','b','c','d','e','f','g','h','i','j','k','l','m','n','o','p','q','r','s','t','u',
'v','x','y','z']
hllist = [];
l1 = [];
shift = ord('a');
for i in palindrome:
    if (i !=' '):
        histList[ord(i)-shift] += 1;
for i in range(len(histList)):
    if (histList[i] != 0.0):
        l1.append(l[i])
        hllist.append(histList[i])
plt.bar(l1[:], height = hllist);
#plt.xticks(n.arange(26),l[:]);
plt.xlabel("Letters");
plt.ylabel("Count");
plt.show();
print("Note: missing letters are a count of 0")
```



Note: missing letters are a count of 0