1. Generating prime numbers upto a number

In [36]:
```
user_input = int(input("Enter a number: "))

for j in range(1, user_input):
    count=0
    # print(j)
    for i in range(1, user_input+1):
        if j % i == 0:
            count+=1
    if count <= 2:
        print(j)
# print(count)
```

```
1
2
3
5
7
```

In [37]:
```
L = [x for x in range(2,51) if all(x%y != 0 for y in range(2,x//2+1))]
L
```

Out[37]:
```
[2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47]
```

2. transpose a given matrix of list of lists

In [83]:
```
A = [[1,2,3], [4,5,6]]
A_T=[]
for i in range(len(A[0])):
    new_row=[]
    for row in A:
        # print(row[i])
        new_row.append(row[i])
    A_T.append(new_row)
```

In [84]:
```
A_T
```

Out[84]:
```
[[1, 4], [2, 5], [3, 6]]
```

In [87]:
```
X = [[row[i] for row in A] for i in range(len(A[0]))]
```

In [88]:
```
X
```

Out[88]:
```
[[1, 4], [2, 5], [3, 6]]
```

3. Dictionary comprehension

In [89]:
```
L = [1, 2, 2, 1, 4, 2, 3, 3]
```

In [92]:
```
k = {L[i]: L.count(L[i]) for i in L }
```

In [93]:
```
k
```

Out[93]:
```
{2: 3, 4: 1, 1: 2}
```

In [ ]:
```

```