In [1]:

```
#Creating an random array of customers from c1-c5
n=np.random.choice(['C1','C2','C3','C4','C5'],500)
```

In [2]:

```
#Assuming that each customers purchased two products(maybe same or different so repeating the same id twice
n=np.repeat(n,2)
```

In [3]:

```
#Viewing the array
n
```

Out[3]:

```
array(['C4', 'C4', 'C4', 'C4', 'C3', 'C3', 'C1', 'C1', 'C4', 'C4', 'C5',
       'C5', 'C5', 'C5', 'C2', 'C2', 'C3', 'C3', 'C4', 'C4', 'C4', 'C4',
       'C4', 'C4', 'C3', 'C3', 'C4', 'C4', 'C5', 'C5', 'C4', 'C4', 'C1',
       'C1', 'C3', 'C3', 'C5', 'C5', 'C5', 'C5', 'C1', 'C1', 'C5', 'C5',
       'C3', 'C3', 'C5', 'C5', 'C1', 'C1', 'C1', 'C1', 'C5', 'C5', 'C2',
       'C2', 'C1', 'C1', 'C3', 'C3', 'C4', 'C4', 'C4', 'C4', 'C2', 'C2',
       'C4', 'C4', 'C4', 'C4', 'C4', 'C4', 'C3', 'C3', 'C1', 'C1', 'C4',
       'C4', 'C2', 'C2', 'C2', 'C2', 'C5', 'C5', 'C4', 'C4', 'C3', 'C3',
       'C2', 'C2', 'C2', 'C2', 'C4', 'C4', 'C1', 'C1', 'C4', 'C4', 'C4',
       'C4', 'C3', 'C3', 'C2', 'C2', 'C5', 'C5', 'C2', 'C2', 'C3', 'C3',
       'C4', 'C4', 'C1', 'C1', 'C5', 'C5', 'C3', 'C3', 'C3', 'C3', 'C4',
       'C4', 'C5', 'C5', 'C5', 'C5', 'C3', 'C3', 'C1', 'C1', 'C1', 'C1',
       'C4', 'C4', 'C5', 'C5', 'C4', 'C4', 'C5', 'C5', 'C3', 'C3', 'C3',
       'C3', 'C2', 'C2', 'C3', 'C3', 'C2', 'C2', 'C3', 'C3', 'C2', 'C2',
       'C3', 'C3', 'C1', 'C1', 'C2', 'C2', 'C1', 'C1', 'C5', 'C5', 'C3',
       'C3', 'C3', 'C3', 'C4', 'C4', 'C2', 'C2', 'C4', 'C4', 'C5', 'C5',
       'C5', 'C5', 'C4', 'C4', 'C1', 'C1', 'C1', 'C1', 'C1', 'C1', 'C3',
       'C3', 'C5', 'C5', 'C4', 'C4', 'C3', 'C3', 'C5', 'C5', 'C5', 'C5',
       'C1', 'C1', 'C4', 'C4', 'C2', 'C2', 'C1', 'C1', 'C5', 'C5', 'C4',
       'C4', 'C2', 'C2', 'C4', 'C4', 'C4', 'C4', 'C1', 'C1', 'C2', 'C2',
       'C3', 'C3', 'C3', 'C3', 'C3', 'C3', 'C4', 'C4', 'C1', 'C1', 'C1',
       'C1', 'C5', 'C5', 'C3', 'C3', 'C5', 'C5', 'C4', 'C4', 'C4', 'C4',
       'C2', 'C2', 'C3', 'C3', 'C2', 'C2', 'C3', 'C3', 'C5', 'C5', 'C4',
       'C4', 'C2', 'C2', 'C4', 'C4', 'C4', 'C4', 'C1', 'C1', 'C2', 'C2',
       'C1', 'C1', 'C3', 'C3', 'C3', 'C3', 'C3', 'C3', 'C5', 'C5', 'C1',
       'C1', 'C5', 'C5', 'C3', 'C3', 'C4', 'C4', 'C5', 'C5', 'C3', 'C3',
       'C1', 'C1', 'C4', 'C4', 'C5', 'C5', 'C5', 'C5', 'C5', 'C5', 'C3',
       'C3', 'C2', 'C2', 'C2', 'C2', 'C3', 'C3', 'C5', 'C5', 'C4', 'C4',
       'C5', 'C5', 'C4', 'C4', 'C3', 'C3', 'C1', 'C1', 'C4', 'C4', 'C4',
       'C4', 'C5', 'C5', 'C3', 'C3', 'C2', 'C2', 'C3', 'C3', 'C5', 'C5',
       'C1', 'C1', 'C4', 'C4', 'C1', 'C1', 'C3', 'C3', 'C4', 'C4', 'C3',
       'C3', 'C1', 'C1', 'C3', 'C3', 'C5', 'C5', 'C2', 'C2', 'C4', 'C4',
       'C4', 'C4', 'C1', 'C1', 'C5', 'C5', 'C4', 'C4', 'C2', 'C2', 'C2',
       'C2', 'C1', 'C1', 'C5', 'C5', 'C3', 'C3', 'C5', 'C5', 'C4', 'C4',
       'C2', 'C2', 'C2', 'C2', 'C3', 'C3', 'C3', 'C3', 'C3', 'C3', 'C1',
       'C1', 'C4', 'C4', 'C2', 'C2', 'C4', 'C4', 'C5', 'C5', 'C4', 'C4',
       'C3', 'C3', 'C2', 'C2', 'C2', 'C2', 'C5', 'C5', 'C4', 'C4', 'C5',
       'C5', 'C3', 'C3', 'C3', 'C3', 'C1', 'C1', 'C1', 'C1', 'C4', 'C4',
       'C5', 'C5', 'C5', 'C5', 'C1', 'C1', 'C2', 'C2', 'C5', 'C5', 'C4',
       'C4', 'C3', 'C3', 'C1', 'C1', 'C4', 'C4', 'C1', 'C1', 'C2', 'C2',
       'C4', 'C4', 'C1', 'C1', 'C1', 'C1', 'C3', 'C3', 'C1', 'C1', 'C1',
       'C1', 'C5', 'C5', 'C5', 'C5', 'C1', 'C1', 'C2', 'C2', 'C2', 'C2',
       'C3', 'C3', 'C5', 'C5', 'C1', 'C1', 'C5', 'C5', 'C2', 'C2', 'C3',
       'C3', 'C1', 'C1', 'C1', 'C1', 'C3', 'C3', 'C3', 'C3', 'C2', 'C2',
       'C1', 'C1', 'C1', 'C1', 'C2', 'C2', 'C1', 'C1', 'C1', 'C1', 'C4',
       'C4', 'C3', 'C3', 'C1', 'C1', 'C2', 'C2', 'C2', 'C2', 'C4', 'C4',
       'C4', 'C4', 'C2', 'C2', 'C4', 'C4', 'C5', 'C5', 'C1', 'C1', 'C4',
       'C4', 'C1', 'C1', 'C3', 'C3', 'C1', 'C1', 'C5', 'C5', 'C3', 'C3',
       'C4', 'C4', 'C4', 'C4', 'C2', 'C2', 'C5', 'C5', 'C2', 'C2', 'C5',
       'C5', 'C2', 'C2', 'C4', 'C4', 'C4', 'C4', 'C3', 'C3', 'C3', 'C3',
       'C2', 'C2', 'C2', 'C2', 'C5', 'C5', 'C1', 'C1', 'C5', 'C5', 'C1',
       'C1', 'C2', 'C2', 'C4', 'C4', 'C2', 'C2', 'C2', 'C2', 'C4', 'C4',
       'C3', 'C3', 'C3', 'C3', 'C4', 'C4', 'C2', 'C2', 'C3', 'C3', 'C4',
       'C4', 'C4', 'C4', 'C4', 'C4', 'C3', 'C3', 'C5', 'C5', 'C2', 'C2',
       'C4', 'C4', 'C3', 'C3', 'C3', 'C3', 'C1', 'C1', 'C1', 'C1', 'C4',
       'C4', 'C5', 'C5', 'C4', 'C4', 'C3', 'C3', 'C1', 'C1', 'C4', 'C4',
       'C4', 'C4', 'C4', 'C4', 'C2', 'C2', 'C2', 'C2', 'C3', 'C3', 'C5',
       'C5', 'C5', 'C5', 'C4', 'C4', 'C1', 'C1', 'C5', 'C5', 'C4', 'C4',
       'C2', 'C2', 'C5', 'C5', 'C5', 'C5', 'C4', 'C4', 'C4', 'C4', 'C4',
       'C4', 'C4', 'C4', 'C3', 'C3', 'C2', 'C2', 'C4', 'C4', 'C1', 'C1',
       'C4', 'C4', 'C4', 'C4', 'C3', 'C3', 'C1', 'C1', 'C2', 'C2', 'C4',
       'C4', 'C3', 'C3', 'C1', 'C1', 'C5', 'C5', 'C2', 'C2', 'C4', 'C4',
       'C3', 'C3', 'C5', 'C5', 'C4', 'C4', 'C5', 'C5', 'C3', 'C3', 'C3',
       'C3', 'C4', 'C4', 'C4', 'C4', 'C5', 'C5', 'C4', 'C4', 'C4', 'C4',
       'C3', 'C3', 'C1', 'C1', 'C3', 'C3', 'C5', 'C5', 'C5', 'C5', 'C3',
       'C3', 'C2', 'C2', 'C2', 'C2', 'C4', 'C4', 'C4', 'C4', 'C3', 'C3',
       'C5', 'C5', 'C1', 'C1', 'C5', 'C5', 'C3', 'C3', 'C5', 'C5', 'C3',
       'C3', 'C4', 'C4', 'C4', 'C4', 'C4', 'C4', 'C3', 'C3', 'C3', 'C3',
       'C2', 'C2', 'C5', 'C5', 'C5', 'C5', 'C2', 'C2', 'C2', 'C2', 'C5',
       'C5', 'C1', 'C1', 'C4', 'C4', 'C1', 'C1', 'C5', 'C5', 'C1', 'C1',
       'C1', 'C1', 'C5', 'C5', 'C5', 'C5', 'C4', 'C4', 'C3', 'C3', 'C4',
       'C4', 'C5', 'C5', 'C2', 'C2', 'C1', 'C1', 'C4', 'C4', 'C3', 'C3',
       'C2', 'C2', 'C2', 'C2', 'C5', 'C5', 'C3', 'C3', 'C2', 'C2', 'C5',
       'C5', 'C3', 'C3', 'C2', 'C2', 'C3', 'C3', 'C4', 'C4', 'C3', 'C3',
```

In [4]:

```
#Creating an array of product elements
p = np.random.choice(['A', 'B', 'C', 'D'],1000)
```

In [5]:
```
#Viewing the array
p
```

```
array([['C1', 'C1', 'C3', 'C3', 'C2', 'C2', 'C4', 'C4', 'C5', 'C5', 'C3',
        'C3', 'C3', 'C3', 'C3', 'C3', 'C2', 'C2', 'C2', 'C2', 'C3', 'C3',
        'C1', 'C1', 'C1', 'C1', 'C1', 'C4', 'C4', 'C2', 'C2', 'C4', 'C4', 'C2',
        'C2', 'C3', 'C3', 'C5', 'C5', 'C2', 'C2', 'C1', 'C1', 'C5', 'C5',
        'C3', 'C3', 'C1', 'C1', 'C2', 'C2', 'C1', 'C1', 'C2', 'C2', 'C1',
        'C1', 'C1', 'C1', 'C3', 'C3', 'C3', 'C3', 'C2', 'C2', 'C3', 'C3',
        'C2', 'C2', 'C4', 'C4', 'C2', 'C2', 'C4', 'C4', 'C5', 'C5', 'C3',
        'C3', 'C1', 'C1', 'C1', 'C1', 'C4', 'C4', 'C1', 'C1', 'C3', 'C3',
        'C2', 'C2', 'C2', 'C2', 'C5', 'C5', 'C5', 'C5', 'C2', 'C2', 'C2',
        'C2', 'C3', 'C3', 'C5', 'C5', 'C1', 'C1', 'C2', 'C2', 'C5', 'C5',
        'C3', 'C3', 'C5', 'C5', 'C4', 'C4', 'C3', 'C3', 'C4', 'C4', 'C4',
        'C4', 'C2', 'C2', 'C4', 'C4', 'C3', 'C3', 'C3', 'C3', 'C2', 'C2',
        'C2', 'C2', 'C5', 'C5', 'C3', 'C3', 'C4', 'C4', 'C2', 'C2', 'C5',
        'C5', 'C1', 'C1', 'C5', 'C5', 'C1', 'C1', 'C1', 'C1', 'C3', 'C3',
        'C4', 'C4', 'C4', 'C4', 'C3', 'C3', 'C5', 'C5', 'C3', 'C3', 'C5',
        'C5', 'C3', 'C3', 'C1', 'C1', 'C4', 'C4', 'C3', 'C3', 'C1', 'C1',
        'C3', 'C3', 'C3', 'C3', 'C5', 'C5', 'C4', 'C4', 'C2', 'C2'],
       dtype='<U2')
```

Out[5]:

```
array(['D', 'A', 'C', 'D', 'A', 'D', 'C', 'D', 'A', 'A', 'C', 'B', 'A',
       'A', 'A', 'A', 'B', 'C', 'A', 'B', 'C', 'B', 'B', 'A', 'D', 'B',
       'D', 'A', 'C', 'C', 'D', 'A', 'A', 'D', 'C', 'C', 'A', 'B', 'D',
       'B', 'A', 'B', 'D', 'C', 'A', 'A', 'A', 'B', 'C', 'D', 'B', 'A',
       'C', 'A', 'A', 'C', 'B', 'C', 'A', 'C', 'C', 'B', 'D', 'B', 'A',
       'B', 'A', 'B', 'D', 'A', 'C', 'C', 'B', 'B', 'D', 'A', 'B', 'C',
       'D', 'A', 'A', 'A', 'C', 'B', 'A', 'B', 'D', 'B', 'B', 'A', 'C',
       'C', 'A', 'D', 'A', 'D', 'C', 'B', 'D', 'D', 'D', 'B', 'C', 'B',
```

In [6]:

```
#Creating the array for quantity purchased
q=np.random.randint(1,10,1000)
```

```
       'A', 'B', 'B', 'D', 'B', 'D', 'D', 'C', 'A', 'A', 'B', 'A', 'A',
       'D', 'D', 'B', 'C', 'D', 'D', 'D', 'B', 'C', 'C', 'A', 'D', 'B',
       'D', 'A', 'D', 'D', 'D', 'B', 'B', 'D', 'C', 'C', 'D', 'B', 'A',
       'D', 'A', 'B', 'A', 'D', 'C', 'B', 'A', 'D', 'D', 'B', 'A', 'A',
       'B', 'B', 'C', 'D', 'D', 'D', 'B', 'A', 'D', 'C', 'D', 'A', 'C',
```

In [7]:

```
#Viewing the array
q
```

```
       'D', 'A', 'C', 'D', 'A', 'B', 'C', 'C', 'A', 'B', 'C', 'A', 'C',
       'D', 'A', 'C', 'A', 'A', 'A', 'D', 'D', 'B', 'C', 'B', 'D', 'A',
       'C', 'D', 'B', 'B', 'A', 'C', 'D', 'D', 'A', 'A', 'D', 'A', 'A',
       'A', 'A', 'C', 'D', 'D', 'A', 'D', 'A', 'B', 'D', 'C', 'B', 'D',
       'C', 'A', 'C', 'B', 'A', 'C', 'A', 'B', 'D', 'A', 'B', 'A', 'D',
```

Out[7]:

```
array([7A'7,'D',7,B8, 8A'9,'B',8,C4, 5C'1,'B',8,B3, 6A'9,'D',6,B3, 9B'5,
       8C'9,'B',1,C3, 8C'7,'A',8,D5, 9B'5,'C',4,D9, 1C'9,'B',8,A6, 2C'9,
       2B'8,'A',6,B3, 8D'3,'B',1,B4, 5A'8,'B',7,A3, 6B'6,'B',5,B1, 6A'4,
       6B'3,'C',6,D9, 3D'1,'D',4,B6, 6D'3,'C',6,C9, 3A'3,'C',2,C5, 6B'3,
       6B'4,'A',6,C6, 2C'3,'D',5,B3, 6D'5,'C',9,A8, 4A'3,'B',3,A7, 2B'6,
       1B'6,'A',6,D8, 6B'6,'D',4,A8, 7B'1,'D',6,C6, 6D'7,'A',6,C5, 7C'2,
       7A'5,'A',2,A3, 7D'2,'A',3,D4, 6D'4,'D',9,C4, 7B'5,'A',9,B8, 5B'8,
       9C'8,'B',6,D2, 6B'8,'B',6,A6, 6B'5,'A',8,C1, 3C'6,'B',6,C4, 7C'8,
       4C'9,'A',4,B1, 7A'6,'D',1,A2, 6B'1,'B',2,D6, 9D'6,'B',6,C6, 5C'2,
       7D'5,'A',7,B3, 1C'2,'A',4,B6, 8A'1,'C',3,B7, 3B'9,'A',8,D4, 5D'6,
       2A'3,'B',7,B6, 9B'7,'A',6,D4, 2D'9,'D',7,A8, 9C'3,'A',2,B4, 9B'7,
       6D'3,'D',1,A3, 9B'4,'A',7,D1, 7D'9,'B',7,A7, 2D'5,'C',7,C6, 2C'6,
       5D'3,'A',9,C3, 6C'9,'D',6,D3, 3C'2,'C',2,B5, 7A'8,'A',1,B3, 2B'5,
       8D'3,'B',9,A1, 9B'5,'B',4,A3, 2B'2,'D',1,C6, 3A'2,'D',4,D9, 9C'9,
       6A'4,'A',5,D7, 9A'4,'A',1,A8, 1B'6,'B',8,A7, 8B'6,'A',2,A9, 8A'9,
       3C'1,'B',5,B6, 9D'2,'C',7,D1, 9B'5,'D',2,A7, 4C'6,'B',5,C3, 6C'2,
       8A'5,'B',8,D1, 5B'5,'D',5,C2, 4D'8,'A',1,C2, 6A'7,'D',9,B4, 4B'4,
       9A'8,'C',7,C9, 6B'1,'A',4,D5, 4A'8,'B',7,D6, 3D'5,'D',9,C4, 7B'8,
       2A'1,'D',6,A1, 8A'7,'B',4,D9, 4C'4,'C',3,D9, 8A'6,'A',8,A1, 1A'3,
       4B'2,'B',7,D6, 6D'2,'B',7,D2, 4C'6,'B',1,B5, 4A'5,'D',4,C9, 3A'4,
       7C'7,'D',8,A4, 7D'6,'D',3,A9, 4D'6,'A',5,D6, 6B'5,'B',5,A6, 3B'4,
       2A'3,'C',7,B9, 4C'9,'D',7,A9, 3A'9,'D',2,B2, 4A'3,'C',4,A5, 4B'5,
       7A'4,'A',9,A3, 4A'3,'D',5,A7, 6A'1,'D',1,B1, 1A'5,'A',1,B2, 7A'5,
       4D'5,'C',5,D9, 4B'9,'C',6,C2, 3D'5,'C',5,A7, 1C'9,'A',3,A8, 9B'8,
       6B'4,'C',1,B7, 6D'3,'D',5,C1, 8D'3,'A',1,D2, 7C'8,'A',2,D4, 3B'6,
       4D'8,'D',3,C7, 5B'1,'A',9,D1, 4A'4,'C',9,D9, 1A'4,'C',3,C4, 8C'7,
       4D'6,'B',7,B8, 3A'1,'B',1,D5, 6C'8,'D',6,B8, 8C'4,'B',7,D4, 5C'5,
       5A'7,'B',5,B1, 9A'7,'A',8,A3, 2B'7,'A',8,B7, 9C'1,'C',4,C8, 9C'5,
       3D'8,'D',6,D5, 4B'5,'D',5,C8, 4D'3,'C',3,A1, 8B'3,'C',1,A6, 9A'6,
       5A'4,'D',7,D1, 7A'4,'B',1,B4, 9A'8,'B',4,C1, 9B'3,'D',1,C1, 7A'1,
       6C'6,'D',1,A4, 5B'1,'D',4,D2, 4C'6,'B',4,B7, 4D'9,'A',2,A4, 9A'4,
       2C'5,'B',3,D2, 6D'4,'B',8,D3, 9B'6,'B',4,B5, 7C'5,'C',5,A7, 7C'7,
       2D'5,'B',7,A4, 7D'7,'D',7,C3, 8C'3,'B',4,A3, 9C'4,'B',5,D2, 1A'9,
       8A'6,'A',3,D9, 5B'7,'D',2,B1, 8A'8,'D',8,D2, 9B'5,'A',8,A4, 5D'1,
       3C'2,'D',2,B2, 9B'7,'B',1,B6, 9D'2,'C',5,D1, 3C'5,'B',7,B7, 2D'1,
       8D'2,'C',8,D9, 1C'4,'A',9,D2, 5D'8,'D',1,C4, 9B'3,'B',9,A5, 7A'8,
       4B'6,'B',9,B2, 8A'4,'C',1,B9, 1C'1,'A',7,B6, 5A'5,'B',7,A4, 4A'6,
       9C'3,'D',9,C3, 5B'2,'B',5,A6, 9D'7,'A',1,C7, 9C'3,'D',8,A2, 3C'8,
       8D'7,'C',9,D9, 9D'8,'D',9,C5, 4D'3,'D',9,C4, 6A'2,'C',8,D9, 7B'5,
       4D'3,'D',8,A6, 7A'9,'D',6,B2, 3B'2,'C',5,C9, 5A'7,'D',9,C6, 8D'1,
       1B'2,'B',7,C2, 9D'4,'A',4,C5, 5D'7,'C',6,C4, 8C'2,'C',2,A6, 4B'8,
       1C'6,'D',8,B6, 8D'5,'B',5,B3, 2D'4,'A',9,A6, 5A'3,'A',5,B1, 5B'1,
       1D'4,'C',6,B7, 2A'1,'D',4,B2, 7D'9,'A',3,B6, 4D'3,'B',3,C7, 8D'8,
       2D'9,'A',3,B8, 7C'7,'B',6,A8, 8A'7,'A',4,B9, 8C'3,'D',6,C8, 6A'6,
       4B'2,'B',8,A9, 3D'4,'C',4,C8, 9D'3,'A',9,C3, 4D'2,'D',1,A2, 3D'8,
       4B'9,'B',9,A7, 1B'1,'A',5,C5])'D', 'B', 'A', 'A', 'D', 'C', 'C',
       'A', 'C', 'B', 'D', 'C', 'C', 'D', 'B', 'B', 'A', 'B', 'B', 'B',
       'A', 'C', 'C', 'D', 'C', 'D', 'D', 'C', 'D', 'A', 'A', 'B', 'C',
       'A', 'B', 'B', 'C', 'B', 'B', 'A', 'D', 'A', 'D', 'C', 'C', 'C',
```

In [8]:

```
#Creating an dictionary to map the products to price per quantity
dic={'A':400,'B':250,'C':479,'D':750}
```

```
       'A', 'B', 'A', 'A', 'B', 'D', 'B', 'A', 'B', 'A', 'D', 'C', 'C',
       'D', 'B', 'A', 'A', 'C', 'A', 'C', 'D', 'D', 'B', 'B', 'D', 'A',
       'B', 'D', 'C', 'D', 'A', 'D', 'D', 'D', 'A', 'A', 'A', 'A', 'A',
       'B', 'A', 'D', 'C', 'A', 'D', 'D', 'D', 'D', 'B', 'C', 'D', 'D',
       'B', 'C', 'B', 'D', 'D', 'D', 'A', 'C', 'A', 'A', 'B', 'D', 'C',
       'D', 'A', 'D', 'C', 'C', 'B', 'A', 'D', 'B', 'A', 'A', 'D', 'B',
       'C', 'D', 'B', 'D', 'D', 'B', 'D', 'C', 'B', 'D', 'A', 'C', 'A',
```

```
       'A', 'B', 'D', 'D', 'C', 'C', 'C', 'D', 'D', 'B', 'A', 'C', 'D',
       'B', 'C', 'D', 'D', 'C', 'A', 'C', 'C', 'D', 'D', 'B', 'D', 'C',
       'D', 'C', 'B', 'D', 'D', 'C', 'A', 'D', 'A', 'D', 'C', 'A'],
      dtype='<U1')
```

In [9]:
```
#Creating an new DataFrame
df=pd.DataFrame()
```

In [10]:
```
#Appending the Customer id into the Dataframe
df['Customer Id']=n
```

In [11]:
```
#Viewing the DataFrame
df
```

Out[11]:

	Customer Id
0	C4
1	C4
2	C4
3	C4
4	C3
...	...
995	C5
996	C4
997	C4
998	C2
999	C2

1000 rows × 1 columns

In [12]:
```
#Appending the Product into the Dataframe
df['Product']=p
```

In [13]:
```
#Viewing the DataFrame
df
```

Out[13]:

	Customer Id	Product
0	C4	D
1	C4	A
2	C4	C
3	C4	D
4	C3	A
...	...	...
995	C5	D
996	C4	A
997	C4	D
998	C2	C
999	C2	A

1000 rows × 2 columns

In [14]:

```
#Appending the Quantity into the Dataframe
df['Quantity']=q
```

In [15]:

```
#Viewing the DataFrame
df
```

Out[15]:

	Customer Id	Product	Quantity
0	C4	D	7
1	C4	A	7
2	C4	C	2
3	C4	D	7
4	C3	A	8
...	...	...	...
995	C5	D	1
996	C4	A	1
997	C4	D	2
998	C2	C	5
999	C2	A	5

1000 rows × 3 columns

In [16]:

```
#Mapping the column PPQ by taking the Reference as product
#Becoz for the same product it has the same PPQ
#So we dont use randint here instead we use map based on Products
df['Price per Quantity']=df['Product'].map(dic)
```

In [17]:

```
#Viewing the DataFrame
df
```

Out[17]:

	Customer Id	Product	Quantity	Price per Quantity
0	C4	D	7	750
1	C4	A	7	400
2	C4	C	2	479
3	C4	D	7	750
4	C3	A	8	400
...	...	...	...	...
995	C5	D	1	750
996	C4	A	1	400
997	C4	D	2	750
998	C2	C	5	479
999	C2	A	5	400

1000 rows × 4 columns

1)Total price for each row

In [18]:

```
#Total Price= PPQ*Quantity
df['TotalPrice']=df['Quantity']*df['Price per Quantity']
```

In [19]:

```
#Viewing the DataFrame
df
```

Out[19]:

	Customer Id	Product	Quantity	Price per Quantity	TotalPrice
0	C4	D	7	750	5250
1	C4	A	7	400	2800
2	C4	C	2	479	958
3	C4	D	7	750	5250
4	C3	A	8	400	3200
...	...	...	...	...	...
995	C5	D	1	750	750
996	C4	A	1	400	400
997	C4	D	2	750	1500
998	C2	C	5	479	2395
999	C2	A	5	400	2000

1000 rows × 5 columns

2)Which customer purchased more (by number of products)

In [21]:

```
con= df.groupby(['Customer Id'])['Quantity'].sum()
```

In [22]:

```
con.sort_values(ascending=False)
```

Out[22]:

```
Customer Id
C4    1248
C3    1222
C5     971
C1     884
C2     838
Name: Quantity, dtype: int32
```

In [23]:

```
max(con)
```

Out[23]:

```
1248
```

3)Which customer purchased more (by total price)

In [32]:

```
con=df.groupby(['Customer Id'])['TotalPrice'].sum()
```

In [33]:

```
con
```

Out[33]:

```
Customer Id
C1    439564
C2    374469
C3    590172
C4    598345
C5    464383
Name: TotalPrice, dtype: int64
```

4)which customer purchased more (by number of orders)

In [34]:

```
df['Customer Id'].value_counts()
```

Out[34]:

```
C4    234
C3    226
C5    190
C2    178
C1    172
Name: Customer Id, dtype: int64
```

5)Which product is least purchased

In [35]:

```
con=df.groupby(['Product'])['Quantity'].sum()
```

In [36]:

```
con
```

Out[36]:

```
Product
A    1397
B    1249
C    1077
D    1440
Name: Quantity, dtype: int32
```