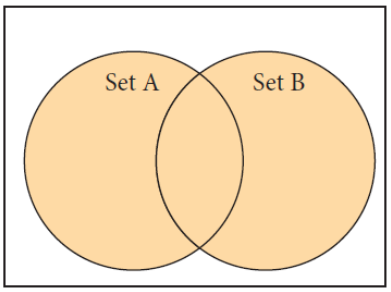
Set Operations in Python

As you learnt in mathematics, the python is also supports the set operations such as Union, Intersection, difference and Symmetric difference.

(i) Union: It includes all elements from two or more sets



In python, the operator | is used to union of two sets. The function union( ) is also used to join two sets in python.

Example: Program to Join (Union) two sets using union operator

```
set_A={2,4,6,8}
set_B={'A', 'B', 'C', 'D'}
U_set=set_A|set_B
print(U_set)
```

Output:

```
{2, 4, 6, 8, 'A', 'D', 'C', 'B'}
```

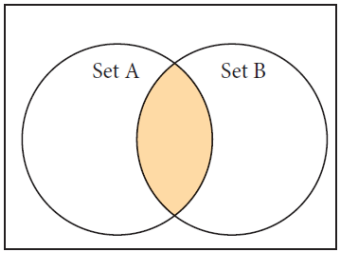
Example: Program to Join (Union) two sets using union function

```
set_A={2,4,6,8}
set_B={'A', 'B', 'C', 'D'}
set_U=set_A.union(set_B)
print(set_U)
```

Output:

```
{'D', 2, 4, 6, 8, 'B', 'C', 'A'}
```

(ii) Intersection: It includes the common elements in two sets



The operator & is used to intersect two sets in python. The function **intersection( )** is also used to intersect two sets in python.

Example: Program to insect two sets using intersection operator

```
set_A={'A', 2, 4, 'D'}

set_B={'A', 'B', 'C', 'D'}

print(set_A & set_B)
```

Output:

```
{'A', 'D'}
```

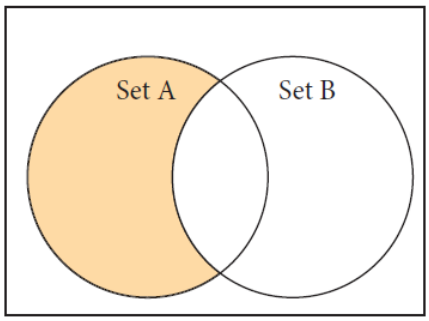
Example: Program to insect two sets using intersection function

```
set_A={'A', 2, 4, 'D'}

set_B={'A', 'B', 'C', 'D'}

print(set_A.intersection(set_B))
```

Output:

```
{'A', 'D'}
```

(iii) Difference It includes all elements that are in first set (say set A) but not in the second set (say set B)



The minus (-) operator is used to difference set operation in python. The function

difference( ) is also used to difference operation.

Example: Program to difference of two sets using minus operator

```
set_A={'A', 2, 4, 'D'}

set_B={'A', 'B', 'C', 'D'}

print(set_A - set_B)
```

Output:

```
{2, 4}
```

Example: Program to difference of two sets using difference function

set_A={'A', 2, 4, 'D'}

set_B={'A', 'B', 'C', 'D'}

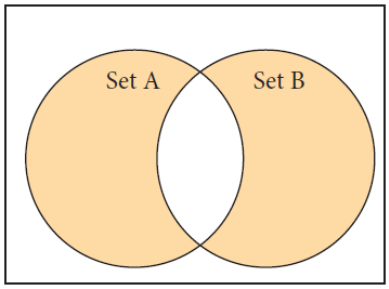
print(set_A.diff erence(set_B))

Output:

{2, 4}

(iv) Symmetric difference

It includes all the elements that are in two sets (say sets A and B) but not the one that are common to two sets.



The caret (^) operator is used to symmetric difference set operation in python. The function **symmetric_difference( )** is also used to do the same operation.

Example: Program to symmetric difference of two sets using caret operator

set_A={'A', 2, 4, 'D'}
set_B={'A', 'B', 'C', 'D'}
print(set_A ^ set_B)

Output:

{2, 4, 'B', 'C'}

Example: Program to difference of two sets using symmetric difference function

set_A={'A', 2, 4, 'D'}
set_B={'A', 'B', 'C', 'D'}
print(set_A.symmetric_difference(set_B))

Output:

{2, 4, 'B', 'C'}