

#lee #3.3

Rising  
coders Era

3)

4)

5)

11) Set datatype }  
  | add()  
  | remove()  
  | discard()  
  | update()  
  } methods

Set operations →

→ union ∪  
→ intersection ∩  
→ difference -  
→ Symmetric difference △

11) [set datatype]

" collection of unique & unordered elements."

Code 1

```
# creating a set  
set = {1, 6, 2, 3, 4, 4, 5}  
  
# displaying the set  
print(set)
```

Code 2

```
# Define string  
str = "Rising coders Era"  
  
# convert string to a set  
char_set = set(str)  
  
# print set of characters  
print(char_set)
```

[explanation]

- 1) We create a set named 'set' using curly braces '{ }'. In this example, ~~we've~~ we've included several integers within the set.
- 2) Sets, eliminates duplicate values so, even though we included value '4' twice. It appears only once.

- 3) Set are unordered, meaning the elements are not stored in any specific order.
- 4) You can access by their index.

### Operations on set

Set operations -

- 1) adding elements.
- 2) removing elements.
- 3) checking for membership
- 4) Set operations like union, intersection, difference, Symmetric difference.

### Adding elements in set

```
my_set = set()      # empty set
```

```
# add single element to set
```

```
my_set.add(1)
```

```
my_set.add(2)
```

```
# Display the set
```

```
print(my_set)      # output {1, 2}
```

```
# Add multiple elements to set using update()
```

```
my_set.update([3, 4, 5])
```

```
# Display updated set
```

```
print(my_set)      # output: {1, 2, 3, 4, 5}
```

## ④ Removing elements from a set :-

# Define set.

```
my_set1 = {1, 2, 3, 4, 5}
```

# Remove element using remove() method.

```
my_set1.remove(3)
```

# Remove element using discard() method.

```
my_set1.discard(4)
```

# Display

```
print(my_set1)
```

## ⑤ Operators used in sets

'+' - Union operator → "Used to combine 2 sets & create a new set that contains unique elements from both set."

'&' - Intersection operator → "Create new set that contains elements that are common to two sets."

'-' - Set difference operator → "Create a new set that contains elements from the first set that are not present in the second set."

'\Delta' - Symmetric difference operator → "create new set that contains elements that are in either of the 2 sets, but not in both."

# Creating 2-sets A & B

$$A = \{1, 2, 3\}$$

$$B = \{3, 4, 5\}$$

1. Union :- "Combining 2 sets to create a new set containing all unique elements from both sets."

Union-set =  $\text{set 1} \cup \text{set 2}$  union operator

$$\text{Union-set} = A \cup B \quad \# \{1, 2, 3, 4, 5\}$$

2. Intersection :- "Creating a new set containing elements that are common to both sets."

$$\text{intersection-set} = A \cap B \quad \# \{3\}$$

3. Difference :- "Creating a new set with elements that are in the first set but not in the second."

$$\text{difference-set} = A - B \quad \# \{1, 2\}$$

$$\text{diffe} = B - A \quad \# \{4, 5\}$$

4. Symmetric Difference :- "Creating a new set with elements that are either of the sets but not in both".

$$\text{Symmetric-diff} = A \Delta B \quad \# \{1, 2, 4, 5\}$$

$$\{8, 2, 1\} = A$$

$$\{2, 4, 8\} = B$$

$$\{2, 4, 8, 1\} \# B \Delta A = 198 - \text{min}$$

$$B \Delta A = 198 - \text{min}$$