Chapter-5
Dictionary and Sets

Dictionary is a collection of key-value pairs.

Syntax:

```
a = { "key" : "value",
      "Abhi" : "Coder",
      "marks" : "100",
      "list" : [2,1,9] }
```

a["key"] => Prints "Value"
a["list"] => Prints [2,1,9]

Properties of a Python Dictionaries

1. It is unordered.
2. It is mutable.
3. It is indexed
4. Cannot contain duplicate keys

Dictionary Methodes
Consider the following dictionary:

```
a = { "name" : "Abhinay",
      "from" : "India",
      "marks" : [92,98,96] }
```

1. a.items() : returns a list of (key,value) tuples.

2. a.keys() : returns a list containing dictionary's keys.

3. a.update ({"friend" : "som"}) : updates the dictionary with supplied key value pairs.

4. a.get("name") : returns the value of the specified keys (and value is returned e.g. "Abhinay" is returned here)

<u>Note</u>: More methods are available on docs.python .org

Sets in Python :
Set is a collection of non repetitive elements

```
s = Set ()      # no repetition allowed!
s.add (1)
s.add (2)       # or set = {1,2}
```

If you are a programming beginner without much knowledge of mathematical operations on sets, you can simply look at sets in python as data types containing unique values.

Properties of Sets

1. Set are unordered. # element order doesn't matter.

2. Set are unindexed.
cannot acces elements by index.

3. There is no way to change items in sets.
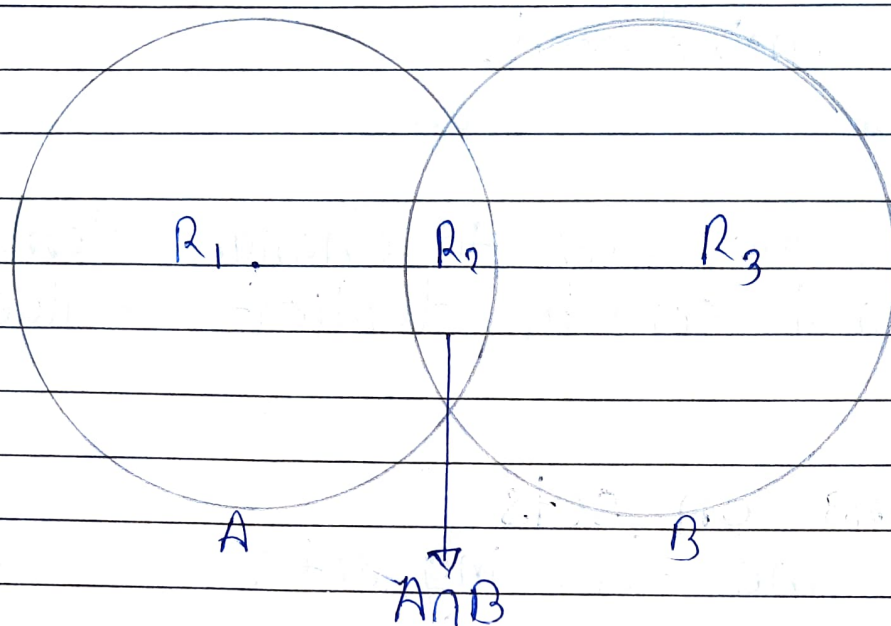4. Sets cannot contain duplicate values.

Operations on sets
consider the following set:

$$s = \{1, 8, 2, 3\}$$

1. len(s) : Returns 4, the length of the set.

2. S.remove(8) : updates the set s and removes 8 from s.

3. s.pop() : Returns an arbitrary element from the set and returns the element removed.

4. s.clear() : Empties the set s.

5. s.union({8,11}) : Returns a new set with all items from both sets
$s = \{1, 8, 2, 3, 11\}$

6. s.intersection ({8,11}): Returns a set which contains only items in bot sets # {8}

$R_2 \Rightarrow A \cap B$

$R_1 + R_2 + R_3 \Rightarrow A \cup B$

$R_1 + R_3 \Rightarrow A \Delta B$

$R_1 \Rightarrow A - B$

$R_3 \Rightarrow B - A$

Chapter - 5
Practice Set

Q.1 Write a program to create a dictionary of Hind words with values a their english translation. Provide user with an option to look it up!

Q.2 Write a program to input eight numbers from the user and display all the unique numbers (once).

Q.3 Can we have a set with 18(int) and "18"(str) as a values in it?

Q.4. What will be the length of following set s:

```
S = set()
s.add (20)
s.add (20.0)
s.add ("20")   => length of s after these operations
```

Q.5. S = {}
What is the type of s?

Q.6. Create an empty dictionary. Allow 4 friends to enter their favourite language as value and use keys as their names. Assume that the names are unique.

Q.7. If name of two friends are same, what will to the program in Problem 6.

Q.8 If languages of two friends are same, what will happen to the program in Problem 6.

Q.9 Can you change the values inside a list which is contained in set s

$$s = \{8, 7, 12, "Abhi", [1,2]\}$$