**Chapter 5 – Dictionary and Sets**

Dictionary is a collection of key-value pairs.

**Syntax:**

''' a = {“key”: “value”,

“harry”: “code”,

“marks” : “100”,

“list”: [1,2,9]}

a[“key”] # Prints value

a[“list”] # Prints [1,2,9] '''

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**Properties of Python Dictionaries**

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

**Dictionary Methods**

Consider the following dictionary,

a = {“name”: “Harry”,

“from”: “India”,

“marks”: [92,98,96]}

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1. **items()** : returns a list of (key,value) tuple.
2. **keys()**: returns a list containing dictionary’s keys.
3. **update({“friend”: “Sam”})**: updates the dictionary with supplied key-value pairs.
4. **get(“name”)**: returns the value of the specified keys (and value is returned e.g., “Harry” is returned here)

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}

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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. Sets are unordered # Elements order doesn’t matter
2. Sets are unindexed # Cannot access 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}

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1. **Len(s) :**Returns 4, the length of the set
2. **remove(8) :**Updates the set S and removes 8 from S
3. **pop() :**Removes an arbitrary element from the set and returns the element removed.
4. **clear() :**Empties the set S
5. **union({8, 11}) :**Returns a new set with all items from both sets. #{1,8,2,3,11}
6. **intersection({8, 11}) :**Returns a set which contains only items in both sets. #{8}

**Chapter 5 – Practice Set**

1. Write a program to create a dictionary of Hindi words with values as their English translation. Provide the user with an option to look it up!
2. Write a program to input eight numbers from the user and display all the unique numbers (once).
3. Can we have a set with 18(int) and “18”(str) as a value in it?
4. What will be the length of the following set S:

S = Set()

S.add(20)

S.add(20.0)

S.add(“20”)

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What will be the length of S after the above operations?

1. S = {}, what is the type of S?
2. Create an empty dictionary. Allow 4 friends to enter their favorite language as values and use keys as their names. Assume that the names are unique.
3. If the names of 2 friends are the same; what will happen to the program in Program 6?
4. If the names of 2 friends are the same; what will happen to the program in Program 6?
5. Can you change the values inside a list which is contained in set S

S = {8, 7, 12, “Harry”, [1, 2]}