

## **5. Data Collections**

### **1. Code, execute and debug programs to perform following**

#### **a) Program using set operations**

```
set1 = {0,1,2,3,4}
set2 = {3,4,5,6,7,8}
print("Union of two sets", set1|set2)
print("Difference of two sets",set1-set2)
print("Difference of two sets",set2-set1)
print("The intersection of two sets",set1 & set2)
print("The symmetric difference between two sets" ,set1 ^ set2)
```

#### **Output:**

Union of two sets {0, 1, 2, 3, 4, 5, 6, 7, 8}  
Difference of two sets {0, 1, 2}  
Difference of two sets {8, 5, 6, 7}  
The intersection of two sets {3, 4}  
The symmetric difference between two sets {0, 1, 2, 5, 6, 7, 8}

#### **b) Program using set comprehension**

##### **a) To create set using set comprehension**

```
s={(m, n) for n in range(2) for m in range(3, 5)}
print(s)
```

#### **Output:**

{(4, 1), (3, 1), (3, 0), (4, 0)}

##### **b) Program to find even multiplies using set comprehension**

```
List = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
newSet = { x*3 for x in List if x%2==0}
print("The existing list is:")
print(List)
print("The Newly Created set is:")
print(newSet)
```

#### **Output:**

The existing list is:  
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]  
The Newly Created set is:  
{6, 12, 18, 24, 30}

## 2. Code, execute and debug programs to perform following

### a) Write a program to illustrate basic operations on tuples

```
h1=(1,2,3,4,5,5)
h2=(6,7,6,8,9)
print("The length of tuple is", len(h1))
print("The concatenation of two tuples is",h1+h2)
print("The repetition of two tuple is", h1*2)
print(3 in h1)
print("The iteration")
for x in(h1):
    print(x)
print("The maximum value : " ,max(h1))
print("The minimum value : ",min(h1))
print("The sorted value : " ,sorted(h1))
print("The sum value : " , sum(h1))
```

#### Output:

```
The length of tuple is 6
The concatenation of two tuples is (1, 2, 3, 4, 5, 5, 6, 7, 6, 8, 9)
The repetition of two tuple is (1, 2, 3, 4, 5, 5, 1, 2, 3, 4, 5, 5)
True
The iteration
1
2
3
4
5
5
The maximum value : 5
The minimum value : 1
The sorted value : [1, 2, 3, 4, 5, 5]
The sum value : 20
```

### b) Program using tuple indexing and slicing

```
tup1 = (22, 3, 45, 4, 2.4, 2, 56, 890, 1)
print("On indexing")
print(tup1[0])
print(tup1[2])
print(tup1[-2])
print(tup1[-1])
print(tup1[2+1])
print("On slicing")
print(tup1[1:4])
print(tup1[:4])
print(tup1[4:])
print(tup1[:])
print(tup1[:2])
print(tup1[-4:-1])
```

#### Output:

```
On indexing
22
45
890
1
4
On slicing
(3, 45, 4)
(22, 3, 45, 4)
(2.4, 2, 56, 890, 1)
(22, 3, 45, 4, 2.4, 2, 56, 890, 1)
(22, 45, 2.4, 56, 1)
(2, 56, 890)
```