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# Set Programs in Python

## Q1 (Set) - Create a set from user input

Code:

data = set(input("Enter elements separated by space: ").split())  
print("Set is:", data)

Sample Input/Output:

Enter elements separated by space: 1 2 3 4 banana bike bus mango Usman Sara orange apple 5 1 Ali yellow red pink  
Set is: {'Ali', '2', 'yellow', 'red', 'bike', '1', '4', 'bus', 'Sara', 'banana', '3', 'mango', 'apple', 'pink', 'orange', '5', 'Usman'}

## Q2 (Set) - Add an element

Code:

data = set(input("Enter elements separated by space: ").split())  
element = input("Enter element to add: ")  
data.add(element)  
print("Updated Set:", data)

Sample Input/Output:

Enter elements separated by space: 1 2 3 4 banana bike bus mango Usman Sara orange apple 5 1 Ali yellow red pink  
Enter element to add: helicopter  
Updated Set: {'Ali', '2', 'yellow', 'red', 'bike', '1', '4', 'bus', 'Sara', 'helicopter', 'banana', '3', 'mango', 'apple', 'pink', 'orange', '5', 'Usman'}

## Q3 (Set) - Remove an element

Code:

data = set(input("Enter elements separated by space: ").split())  
element = input("Enter element to remove: ")  
data.discard(element) # no error if element not found  
print("Updated Set:", data)

Sample Input/Output:

Enter elements separated by space: 1 2 3 4 banana bike bus mango Usman Sara orange apple 5 1 Ali yellow red pink  
Enter element to remove: banana  
Updated Set: {'Ali', '2', 'yellow', 'red', 'bike', '1', '4', 'bus', 'Sara', '3', 'mango', 'apple', 'pink', 'orange', '5', 'Usman'}

## Q4 (Set) - Find length of set

Code:

data = set(input("Enter elements separated by space: ").split())  
print("Length of set:", len(data))

Sample Input/Output:

Enter elements separated by space: 1 2 3 4 banana bike bus mango Usman Sara orange apple 5 1 Ali yellow red pink  
Length of set: 17

## Q5 (Set) - Check membership

Code:

data = set(input("Enter elements separated by space: ").split())  
element = input("Enter element to check: ")  
print(element, "exists in set?", element in data)

Sample Input/Output:

Enter elements separated by space: 1 2 3 4 banana bike bus mango Usman Sara orange apple 5 1 Ali yellow red pink  
Enter element to check: bus  
bus exists in set? True

## Q6 (Set) - Union of two sets

Code:

data1 = set(input("Enter first set elements: ").split())  
data2 = set(input("Enter second set elements: ").split())  
print("Union:", data1 | data2)

Sample Input/Output:

Enter first set elements: 1 2 3 4 5  
Enter second set elements: 6 7 8 9 10  
Union: {'2', '1', '4', '9', '3', '7', '5', '8', '6', '10'}

## Q7 (Set) - Intersection of two sets

Code:

data1 = set(input("Enter first set elements: ").split())  
data2 = set(input("Enter second set elements: ").split())  
print("Intersection:", data1 & data2)

Sample Input/Output:

Enter first set elements: 1 2 3 4 5  
Enter second set elements: 7 6 5 4 3  
Intersection: {'5', '3', '4'}

## Q8 (Set) - Difference of two sets

Code:

data1 = set(input("Enter first set elements: ").split())  
data2 = set(input("Enter second set elements: ").split())  
print("Difference:", data1 - data2)

Sample Input/Output:

Enter first set elements: 8 7 6 5 4 3  
Enter second set elements: 6 5 4  
Difference: {'8', '3', '7'}

## Q9 (Set) - Symmetric difference

Code:

data1 = set(input("Enter first set elements: ").split())  
data2 = set(input("Enter second set elements: ").split())  
print("Symmetric Difference:", data1 ^ data2)

Sample Input/Output:

Enter first set elements: 1 2 3 4 5 6  
Enter second set elements: 1 2 7  
Symmetric Difference: {'3', '6', '4', '5', '7'}

## Q10 (Set) - Clear all elements

Code:

data = set(input("Enter elements separated by space: ").split())  
data.clear()  
print("Cleared Set:", data)

Sample Input/Output:

Enter elements separated by space: 1 2 3 4 banana bike bus mango Usman Sara orange apple 5 1 Ali yellow red pink  
Cleared Set: set()