SETS

1. Write a Python program to find the Cartesian product of two sets.
Example Input: Set1 = {1, 2}, Set2 = {'a', 'b'}
Example Output: `{(1, 'a'), (1, 'b'), (2, 'a'), (2, 'b')}`

2. Write a Python program to check if two sets are disjoint (have no common elements).

Example Input: Set1 = {1, 2, 3}, Set2 = {4, 5, 6}
Example Output: `True`

3. Write a Python program to implement the power set (all possible subsets) of a given set.
Example Input: `{1, 2, 3}`
Example Output: `{{}, {1}, {2}, {3}, {1, 2}, {1, 3}, {2, 3}, {1, 2, 3}}`

4. Write a Python program to find the longest consecutive subsequence in a set.
Example Input: `{100, 4, 200, 1, 3, 2}`
Example Output: `{1, 2, 3, 4}`

5. Write a Python program to find the number of elements in the largest subset of a set where no two elements are adjacent to each other.

Example Input: `{1, 2, 3, 4, 5}`
Example Output: `3` (Subset: {1, 3, 5})

6. Write a Python program to perform set operations on a list of sets (union, intersection, difference).

Example Input: `[set1, set2, set3]` where `set1 = {1, 2, 3}`,`set2 = {3, 4, 5}`,`set3 = {5, 6, 7}`
Example Output:
Union: `{1, 2, 3, 4, 5, 6, 7}`
Intersection: `{}`
Difference (set1 - set2 - set3): `{1, 2}`

7. Write a Python program to find the second smallest element in a set.
Example Input: `{5, 2, 8, 1, 9, 3}`
Example Output: `2`

8. Write a Python program to find the symmetric difference between multiple sets.
Example Input: `[set1, set2, set3]` where `set1 = {1, 2, 3}`,`set2 = {3, 4, 5}`,`set3 = {5, 6, 7}`
Example Output: `{1, 2, 4, 6, 7}`

9. Write a Python program to find the sum of all elements in the union of two sets, excluding elements that are common to both sets.
Example Input: `Set1 = {1, 2, 3},Set2 = {3, 4, 5}`
Example Output: `10` (1 + 2 + 4 + 5)

10. Write a Python program to create a set of all possible anagrams of a given word.
Example Input: `'listen'`
Example Output: `{'silent', 'enlist', 'tinsel', 'inlets', 'slinte', 'listen'}`

11. Write a Python program to find the Cartesian product of two sets.
Example Input: Set1 = {1, 2}, Set2 = {'a', 'b'}
Example Output: `{(1, 'a'), (1, 'b'), (2, 'a'), (2, 'b')}`

12. Write a Python program to check if two sets are disjoint (have no common elements).
Example Input: Set1 = {1, 2, 3}, Set2 = {4, 5, 6}
Example Output: `True`

13. Write a Python program to implement the power set (all possible subsets) of a given set.
Example Input: `{1, 2, 3}`
Example Output: `{{}, {1}, {2}, {3}, {1, 2}, {1, 3}, {2, 3}, {1, 2, 3}}`

14. Write a Python program to find the longest consecutive subsequence in a set.
Example Input: `{100, 4, 200, 1, 3, 2}`
Example Output: `{1, 2, 3, 4}`

15. Write a Python program to find the number of elements in the largest subset of a set where no two elements are adjacent to each other.
Example Input: `{1, 2, 3, 4, 5}`
Example Output: `3` (Subset: {1, 3, 5})

16. Write a Python program to perform set operations on a list of sets (union, intersection, difference).
Example Input: `[set1, set2, set3]` where `set1 = {1, 2, 3},set2 = {3, 4, 5},set3 = {5, 6, 7}`
Example Output:
Union: `{1, 2, 3, 4, 5, 6, 7}`
Intersection: `{}`
Difference (set1 - set2 - set3): `{1, 2}`

17. Write a Python program to find the second smallest element in a set.

Example Input: `{5, 2, 8, 1, 9, 3}`
Example Output: `2`

18. Write a Python program to find the symmetric difference between multiple sets.
Example Input: `[set1, set2, set3]` where `set1 = {1, 2, 3},set2 = {3, 4, 5},set3 = {5, 6, 7}`
Example Output: `{1, 2, 4, 6, 7}`

19. Write a Python program to find the sum of all elements in the union of two sets, excluding elements that are common to both sets.
Example Input: `Set1 = {1, 2, 3},Set2 = {3, 4, 5}`
Example Output: `10` (1 + 2 + 4 + 5)

20. Write a Python program to create a set of all possible anagrams of a given word.
Example Input: `'listen'`
Example Output: `{'silent', 'enlist', 'tinsel', 'inlets', 'slinte', 'listen'}`