

1. **Write a Python program to find elements in a given set that are not in another set.**

```
set1 = {1, 2, 3, 4, 5}
set2 = {4, 5, 6, 7, 8}
result = set1 - set2
print(result)
```

2. **Write a Python program to remove the intersection of a second set with a first set.**

```
set1 = {1, 2, 3, 4, 5}
set2 = {4, 5, 6, 7, 8}
set1 -= set1 & set2
print(set1)
```

3. **Write a Python program to find all the unique words and count the frequency of occurrence from a given list of strings. Use Python set data type.**

```
strings = ["hello world", "hello again", "world of python"]
all_words = []
```

```
for s in strings:
    all_words += s.split()
unique_words = set(all_words)
```

```
for word in unique_words:
    print(word, ":", all_words.count(word))
```

- 4. Write a Python program that finds all pairs of elements in a list whose sum is equal to a given value.**

```
numbers = [2, 4, 3, 5, 7, 8, -1]
target = 7
for x in numbers:
    for y in numbers:
        if x + y == target:
            print(x, "+", y, "=", target)
```

- 5. Write a Python program to find the longest common prefix of all strings. Use the Python set.**

```
words = ["flower", "flow", "flight"]
prefix = ""

for i in range(100):
    try:
        letters = set(w[i] for w in words)
        if len(letters) == 1:
            prefix += letters.pop()
        else:
            break
    except IndexError:
        break
print("Longest common prefix:", prefix)
```

- 6. Write a Python program to find the two numbers whose product is maximum among all the pairs in a given list of numbers. Use the Python set.**

```
numbers = [3, 5, -10, -6, 9, 2]
num_set = set(numbers)

sorted_nums = sorted(num_set)

max1, max2 = sorted_nums[-1], sorted_nums[-2]
min1, min2 = sorted_nums[0], sorted_nums[1]

product_max = max1 * max2
product_min = min1 * min2

if product_max > product_min:
    result_pair = (max1, max2)
    max_product = product_max
else:
    result_pair = (min1, min2)
    max_product = product_min

print(f"The pair with the maximum product is: {result_pair}")
print(f"The maximum product is: {max_product}")
```

- 7. Given two sets of numbers, write a Python program to find the missing numbers in the second set as compared to the first and vice versa. Use the Python set.**

```
set1 = {1, 2, 3, 4, 5}
set2 = {4, 5, 6, 7}

missing_in_set2 = set1 - set2
set1 = set2 - set1

print("Missing in set2:", missing_in_set2)
print("Missing in set1:", set1)
```

8. Write a Python program to find all the anagrams and group them together from a given list of strings.

```
words = ["listen", "silent", "enlist", "tea", "eat", "ate", "bat", "tab"]
anagrams = {}
```

```
for word in words:
    key = ".join(sorted(word))
    if key in anagrams:
        anagrams[key].append(word)
    else:
        anagrams[key] = [word]
```

```
for group in anagrams.values():
    print(group)
```

9. Write a Python program to find all the unique combinations of 3 numbers from a given list of numbers, adding up to a target number.

```
numbers = [1, 2, -1, -1, 3, 0, 4, -2]
target = 3
triplets = []
```

```
for i in range(len(numbers)):
    for j in range(i + 1, len(numbers)):
        for k in range(j + 1, len(numbers)):
            if numbers[i] + numbers[j] + numbers[k] == target:
                triplet = sorted([numbers[i], numbers[j], numbers[k]])
                if triplet not in triplets:
                    triplets.append(triplet)
```

```
print("Unique triplets that sum to", target, ":", triplets)
```

