Assignment 2

Code:

```
class Set:
    def __init__(self, elements=None):
        self._elements = []
        if elements:
            for element in elements:
                self.add(element)

    def add(self, element):
        if element not in self._elements:
            self._elements.append(element)

    def remove(self, element):
        if element in self._elements:
            self._elements.remove(element)

    def contains(self, element):
        return element in self._elements

    def size(self):
        return len(self._elements)

    def iterator(self):
        return iter(self._elements)

    def intersection(self, other_set):
        common_elements = [e for e in self._elements if e in other_set._elements]
        return Set(common_elements)
```

```
    def union(self, other_set):
        new_set = Set(self._elements)
        for element in other_set._elements:
            new_set.add(element)
        return new_set

    def difference(self, other_set):
        unique_elements = [e for e in self._elements if e not in other_set._elements]
        return Set(unique_elements)

    def is_subset(self, other_set):
        return all(e in other_set._elements for e in self._elements)

    def __str__(self):
        return "{ " + ", ".join(str(e) for e in self._elements) + " }"

if __name__ == "__main__":
    setA = Set([1, 2, 3, 4])
    setB = Set([3, 4, 5, 6])

    print("Set A:", setA)
    print("Set B:", setB)

    setA.add(5)
    print("After adding 5 to Set A:", setA)

    setB.remove(6)
    print("After removing 6 from Set B:", setB)

    print("Does Set A contain 3?", setA.contains(3))
    print("Size of Set B:", setB.size())
```

```
print("Intersection of Set A and Set B:", setA.intersection(setB))
print("Union of Set A and Set B:", setA.union(setB))
print("Difference between Set A and Set B:", setA.difference(setB))
print("Is Set A a subset of Set B?", setA.is_subset(setB))
```

Output:

Set A: { 1, 2, 3, 4 }

Set B: { 3, 4, 5, 6 }

After adding 5 to Set A: { 1, 2, 3, 4, 5 }

After removing 6 from Set B: { 3, 4, 5 }

Does Set A contain 3? True

Size of Set B: 3

Intersection of Set A and Set B: { 3, 4, 5 }

Union of Set A and Set B: { 1, 2, 3, 4, 5 }

Difference between Set A and Set B: { 1, 2 }

Is Set A a subset of Set B? False