ASSIGNMENT 1

1.

```
def twoSum(nums, target):
    num_indices = {}
    for i, num in enumerate(nums):
        complement = target - num
        if complement in num_indices:
            return [num_indices[complement], i]
        num_indices[num] = i
    return []
```

2.

```
def removeElement(nums, val):
    i = 0
    j = 0
    while i < len(nums):
        if nums[i] != val:
            nums[j] = nums[i]
            j += 1
        i += 1
    return j
```

3.

```
def searchInsert(nums, target):
    left = 0
    right = len(nums) - 1
    while left <= right:
        mid = (left + right) // 2
        if nums[mid] == target:
            return mid
        elif nums[mid] < target:
            left = mid + 1
        else:
            right = mid - 1
    return left
```

3.

```
def searchInsert(nums, target):
    left = 0
    right = len(nums) - 1
    while left <= right:
        mid = (left + right) // 2
        if nums[mid] == target:
            return mid
        elif nums[mid] < target:
            left = mid + 1
        else:
            right = mid - 1
    return left
```

4.

```
def plusOne(digits):
    carry = 1
    n = len(digits)
    for i in range(n-1, -1, -1):
        digits[i] += carry
        carry = digits[i] // 10
        digits[i] %= 10
    if carry:
        digits.insert(0, carry)
    return digits
```

5.

```
def merge(nums1, m, nums2, n):
    p1 = m - 1
    p2 = n - 1
    p = m + n - 1
    while p1 >= 0 and p2 >= 0:
        if nums1[p1] > nums2[p2]:
            nums1[p] = nums1[p1]
            p1 -= 1
        else:
            nums1[p] = nums2[p2]
            p2 -= 1
        p -= 1
    while p2 >= 0:
        nums1[p] = nums2[p2]
        p2 -= 1
        p -= 1
```

6.

```
def containsDuplicate(nums):
    num_set = set()
    for num in nums:
        if num in num_set:
            return True
        num_set.add(num)
    return False
```

7.

```
def moveZeroes(nums):
    n = len(nums)
    i = 0
    j = 0
    while i < n:
        if nums[i] != 0:
            nums[j] = nums[i]
            j += 1
        i += 1
    while j < n:
        nums[j] = 0
        j += 1
```

8.

```
def findErrorNums(nums):
    n = len(nums)
    num_set = set()
    duplicate = -1
    missing = -1
    for num in nums:
        if num in num_set:
            duplicate = num
        num_set.add(num)
    for i in range(1, n + 1):
        if i not in num_set:
            missing = i
    return [duplicate, missing]
```