1. How can you reverse the words in a target sentence without the help of library methods?
   Solution:

```
string = "Iam a IT professional"
s = string.split()[::-1]
l = []
for i in s:
        l.append(i)
print(" ".join(l))
```

2. How can you replace or remove characters from strings?
   Solution:

```
test_str = "Malayalam"
new_str = test_str[:2] + test_str[3:]
print ("The string after removal of i'th character : " + new_str)
```

3. How can you append texts to files in programming languages?
   Solution:

```
file1 = open("myfile.txt", "w")
L = ["This is Delhi \n", "This is Paris \n", "This is London"]
file1.writelines(L)
file1.close()
file1 = open("myfile.txt", "a")
file1.write("\n")
file1.write("Today")
file1.write("Tomorrow")
file1 = open("myfile.txt", "r")
print("Output of Readlines after appending")
print(file1.read())
print()
file1.close()
```

4. How can you find the largest or smallest number in an array of integers?
   Solution:

```
arr = []
num = int(input(‘How many numbers: ‘))
for n in range(num):
numbers = int(input(‘Enter numbers ‘))
arr.append(numbers)
print(“Maximum element : “, max(arr), “\nMinimum element : “,
min(arr))
```

5. How to find the missing number in a given integer array of 1 to 100?
   Solution:

```
def findMissing(arr, N):
        temp = [0] * (N+1)
        for i in range(0, N):
                temp[arr[i] - 1] = 1
        for i in range(0, N+1):
                if(temp[i] == 0):
                        ans = i + 1
       print(ans)
if __name__ == '__main__':
        arr = [1, 2, 3, 5]
        N = len(arr)
        findMissing(arr, N)
```

6. How to find the duplicate number on a given integer array?
   Solution:

```
def Repeat(x):
        _size = len(x)
        repeated = []
        for i in range(_size):
                k = i + 1
                for j in range(k, _size):
                        if x[i] == x[j] and x[i] not in repeated:
                                repeated.append(x[i])
        return repeated
list1 = [10, 20, 30, 20, 20, 30, 40,50, -20, 60, 60, -20, -20]
print (Repeat(list1))
```

7. How to find the largest and smallest number in an unsorted integer array?
   Solution:

```
arr = [2,45,65,22,45,87,1,33]
print(min(arr))
print(max(arr))
```

8. How to find all pairs of integer arrays whose sum is equal to a given number?
   Solution:

```
def getPairsCount(arr, n, sum):
    count = 0 # Initialize result
        for i in range(0, n):
          for j in range(i + 1, n):
              if arr[i] + arr[j] == sum:
                  count += 1
                  return count
arr = [1, 5, 7, -1, 5]
n = len(arr)
sum = 6
print("Count of pairs is", getPairsCount(arr, n, sum))
```

9. How to find duplicate numbers in an array if it contains multiple duplicates?
   Solution:

```
arr=[1,2,2,3,3,4,5,6,7,7,8,9];
for i in range(0, len(arr)):
    for j in range(i+1, len(arr)):
        if arr[i]==arr[j]:
            print(arr[j)
```

10. How to remove duplicates from a given array?
    Solution:

```
def Remove(number):
    final_list = []
      for num in number:
        if num not in final_list:
            final_list.append(num)
return final_list
```

11. How to sort an integer array in place using the QuickSort algorithm?
    Solution:

```
def QuickSort(arr):
    elements = len(arr)
      if elements < 2:
  return arr
 current_position = 0
 for i in range(1, elements):
     if arr[i] <= arr[0]:
       current_position += 1
       temp = arr[i]
       arr[i] = arr[current_position]
       arr[current_position] = temp
 temp = arr[0]
 arr[0] = arr[current_position]
arr[current_position] = temp
left = QuickSort(arr[0:current_position])
right = QuickSort(arr[current_position+1:elements])
arr = left + [arr[current_position]] + right
return arr
array_to_be_sorted = [4,2,7,3,1,6]
print("Original Array: ",array_to_be_sorted)
print("Sorted Array: ",QuickSort(array_to_be_sorted))

def Remove(number):
    final_list = []
    for num in number:
        if num not in final_list:
            final_list.append(num)
    return final_list
number = [2, 4, 10, 20, 5, 2, 20, 4]
print(Remove(number))
```

12. How to remove duplicates from an array in place?
    Solution:

```
arr = [1, 2, 4, 2, 1, 4, 5]
res = [*set(l)]
print("duplicate elements: ", res)
```