

1.How do you find the missing number in a given integer array of 1 to 100?

```
arr=[1,22,44,60,90,100]
```

```
missing_elements=[item for item in range (arr[0], arr[-1]+1) if item not in arr]
```

```
print(missing_elements)
```

2. How do you find the duplicate number on a given integer array?

```
l=[1,2,1,3,4,3,5,6,4,5]
```

```
l1=[ ]
```

```
for i in l:
```

```
    if i not in l1:
```

```
        l1.append(i)
```

```
    else:
```

```
        print(i,end=' ')
```

3. How do you find the largest and smallest number in an unsorted integer array?

```
arr=[100,200,500,300,700,600]
```

```
print("min value:",min(arr))
```

```
print("max value:",max(arr))
```

4. How do you find all pairs of an integer array whose sum is equal to a given number?

```
def find(array,len,sum):
```

```
    print("pairs whose sum is:",sum)
```

```
    for i in range(len):
```

```
        for j in range(i, len):
```

```
            if (array [i]+array [j])==sum:
```

```
                print(array [i],array [j])
```

```
array=[4,5,6,1,7,3,8]
```

```
sum=9
```

```
print("Array=",array)
```

```
find (array,len (array),sum)
```

5. How do you find duplicate numbers in an array if it contains multiple duplicates?

```
l=[1,2,1,3,4,3,5,6,4,5,6,5,3,2]
```

```
l1=[ ]
```

```
for i in l:
```

```
    if i not in l1:
```

```
        l1.append(i)
```

```
    else:
```

```
        print(i,end=' ')
```

6. How are duplicates removed from a given array in Java?

```
int[] temp = new int[n];
```

```
int j = 0;
```

```
for (int i=0; i<n-1; i++){
```

```
    if (arr[i] != arr[i+1]){
```

```
        temp[j++] = arr[i];
```

```
    }
```

```
}
```

```
temp[j++] = arr[n-1];
```

```
for (int i=0; i<j; i++){
```

```
    arr[i] = temp[i];
```

```
}
```

```
return j;
```

```
}
```

```
public static void main (String[] args) {
```

```
    int arr[] = { 10,20,20,30,30,40,50,50};
```

```
    int length = arr.length;
```

```
    length = removeDuplicateElements(arr, length);
```

```
    for (int i=0; i<length; i++)
```

```
System.out.print(arr[i]+" ");  
}  
}
```

7. How is an integer array sorted in place using the quicksort algorithm?

```
def partition(array, low, high):  
    pivot = array[high]  
    i = low - 1  
    for j in range(low, high):  
        if array[j] <= pivot:  
            i = i + 1  
            (array[i], array[j]) = (array[j], array[i])  
    (array[i + 1], array[high]) = (array[high], array[i + 1])  
    return i + 1
```

```
def quickSort(array, low, high):  
    if low < high:  
        pi = partition(array, low, high)  
        quickSort(array, low, pi - 1)  
        quickSort(array, pi + 1, high)
```

```
data = [1, 7, 4, 1, 10, 9, -2]
```

```
print("Unsorted Array")
```

```
print(data)
```

```
size = len(data)
```

```
quickSort(data, 0, size - 1)
```

```
print('Sorted Array in Ascending Order:')
```

```
print(data)
```

8. How do you remove duplicates from an array in place?

```
class Solution(object):
    def removeDuplicates(self, nums):
        """
        :type nums: List[int]
        :rtype: int
        """
        k=0
        for i in range(1,len(nums)-1):
            j=i+1

            for j in range(j+1,len(len(nums))):
                if nums[i] == nums[j]:
                    del nums[j]
            len_list = len(nums)
            return(len_list, nums)
```

9. How do you reverse an array in place in Java?

```
System.out.println("Original Array:");

for(int i=0;i<intArray.length;i++)

System.out.print(intArray[i] + " ");

System.out.println();
```

10. How are duplicates removed from an array without using any library?

```
arr=[1,32,54,60,90,100]
missing_elements=[item for item in range (arr[0], arr[-1]+1) if item not in arr]
print(missing_elements)
```

11. How do you print duplicate characters from a string?

```
string="characters"
duplicates=[]
for char in string:
    if string.count(char)>1:
        if char not in duplicates:
            duplicates.append(char)
print(*duplicates)
```

12. How do you check if two strings are anagrams of each other?

```
s1="race"
s2="care"
if sorted(s1.lower())==sorted(s2.lower()):
    print("anagram")
else:
    print("not a anagram")
```

13. How do you print the first non-repeated character from a string ?

```
str="characters"
for i in str:
    if i!=' ':
        if(str.count(i)==1):
            print(i,end=" ")
```

14. How can a given string be reversed using recursion?

```
def reverse_string(my_string):
    if len(my_string)==0:
        return my_string
    else:
        return reverse_string(my_string[1:]) + my_string[0]
my_str="tamil"
print(reverse_string (my_str))
```

15. How do you check if a string contains only digits?

```
str="26567367"
x=str.isnumeric()
print(x)
```

16. How are duplicate characters found in a string?

```
string="characters"
duplicates=[]
for char in string:
    if string.count(char)>1:
        if char not in duplicates:
            duplicates.append(char)
print(*duplicates)
```

17. How do you count the number of vowels and consonants in a given string?

```
vowels=['a','e','i','o','u']
str=("apple").lower()
v_ctr=0
c_ctr=0
for x in str:
    if x in vowels:
        v_ctr +=1
    elif x!= ' ':
        c_ctr +=1
print("vowels:",v_ctr)
print("consonant:",c_ctr)
```

18. How do you count the occurrence of a given character in a string?

```
my_string="program"
my_char="r"
print(my_string.count(my_char))
```

19. How do you find all the permutations of a string?

```
from itertools import permutations  
words=[' '.join(p) for p in permutations("pro")]  
print(words)
```

20. How do you reverse words in a given sentence without using any library method?

```
s="program"  
reversed_string=' '.join(reversed(s))  
print(reversed_string)
```

