

**Problem 3:** Given an array of N integers, your task is to find unique triplets that add up to give a sum of zero. In short, you need to return *an array of all the unique triplets* [arr[a], arr[b], arr[c]] such that  $i \neq j$ ,  $j \neq k$ ,  $k \neq i$ , and their sum is equal to zero.

```
def threeSum(nums):
    nums.sort()
    result = []
    N = len(nums)

    for i in range(N - 2):
        if i > 0 and nums[i] == nums[i - 1]:
            continue

        left = i + 1
        right = N - 1

        while left < right:
            total = nums[i] + nums[left] + nums[right]

            if total == 0:
                result.append([nums[i], nums[left], nums[right]])
                left += 1
                right -= 1

                while left < right and nums[left] == nums[left - 1]:
                    left += 1
                while left < right and nums[right] == nums[right + 1]:
                    right -= 1

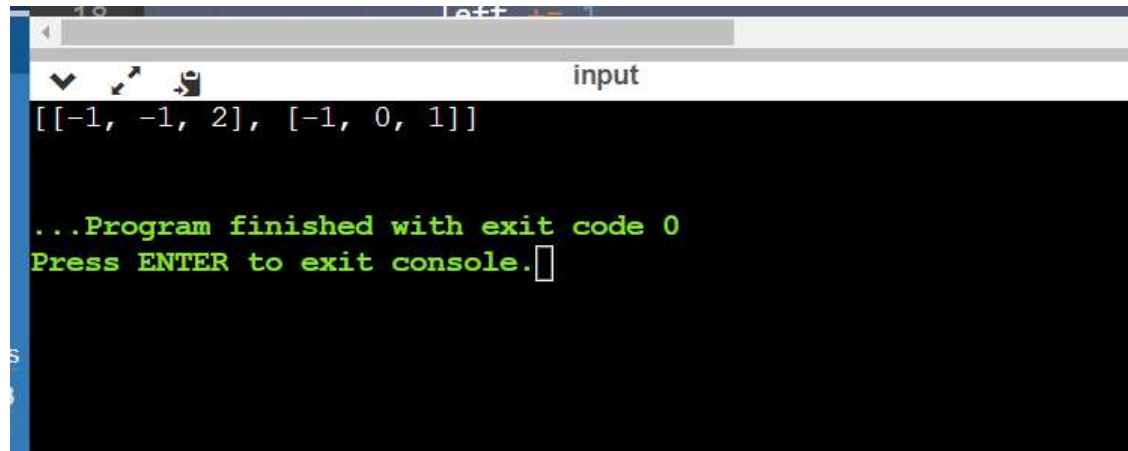
            elif total < 0:
                left += 1
            else:
                right -= 1
```

```
right -= 1
```

```
return result
```

```
nums = [-1, 0, 1, 2, -1, -4]
```

```
print(threeSum(nums))
```

A screenshot of a terminal window with a dark background. The window title is "input". The output text is displayed in a light green monospace font. It shows two nested arrays: "[[-1, -1, 2], [-1, 0, 1]]". Below this, it says "...Program finished with exit code 0" and "Press ENTER to exit console." followed by a cursor icon. On the left side of the terminal, there are some faint, partially visible characters like "S" and "S".

```
input  
[[-1, -1, 2], [-1, 0, 1]]  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```