**ADITYA AMIN**

**ASSIGN : 07**

1. Write a Python Program to find sum of array?

def find\_sum\_of\_array(arr):

"""

Function to find the sum of an array of integers.

Parameters:

arr (list): List of integers.

Returns:

int: Sum of the array elements.

"""

sum = 0

for num in arr:

sum += num

return sum

# Example usage

arr = [1, 2, 3, 4, 5]

total\_sum = find\_sum\_of\_array(arr)

print("Sum of the array is:", total\_sum)

1. Write a Python Program to find largest element in an array?

def find\_largest\_element(arr):

"""

Function to find the largest element in an array of integers.

Parameters:

arr (list): List of integers.

Returns:

int: Largest element in the array.

"""

largest = arr[0] # Initialize the largest element to the first element of the array

for num in arr:

if num > largest:

largest = num

return largest

# Example usage

arr = [12, 45, 67, 23, 89, 56]

largest\_element = find\_largest\_element(arr)

print("Largest element in the array is:", largest\_element)

1. Write a Python Program for array rotation?

def rotate\_array\_left(arr, k):

"""

Function to perform left rotation on an array of integers.

Parameters:

arr (list): List of integers.

k (int): Number of rotations.

Returns:

list: Rotated array.

"""

n = len(arr)

rotated\_arr = [0] \* n # Create a new array to store the rotated elements

# Perform left rotation

for i in range(n):

rotated\_arr[i] = arr[(i + k) % n]

return rotated\_arr

# Example usage

arr = [1, 2, 3, 4, 5]

k = 2 # Number of rotations

rotated\_array = rotate\_array\_left(arr, k)

print("Original array:", arr)

print("Rotated array (left) by", k, "positions:", rotated\_array)

1. Write a Python Program to Split the array and add the first part to the end?

def split\_array\_and\_add(arr, k):

"""

Function to split an array of integers at a given index and append the first part to the end.

Parameters:

arr (list): List of integers.

k (int): Index at which to split the array.

Returns:

list: Array with the first part appended to the end.

"""

n = len(arr)

if k >= n:

print("Error: Index out of range.")

return None

# Split the array and append the first part to the end

split\_arr = arr[:k+1]

arr = arr[k+1:] + split\_arr

return arr

# Example usage

arr = [1, 2, 3, 4, 5]

k = 2 # Index at which to split the array

split\_added\_array = split\_array\_and\_add(arr, k)

print("Original array:", arr)

print("Array after splitting at index", k, "and adding the first part to the end:", split\_added\_array)

1. Write a Python Program to check if given array is Monotonic?

def is\_monotonic(arr):

"""

Function to check if a given array is monotonic.

Parameters:

arr (list): List of integers.

Returns:

bool: True if the array is monotonic, False otherwise.

"""

n = len(arr)

if n <= 2:

return True

# Determine the direction of monotonicity

direction = arr[1] - arr[0]

for i in range(2, n):

if direction == 0:

direction = arr[i] - arr[i-1]

continue

if (arr[i] - arr[i-1]) \* direction < 0:

return False

return True

# Example usage

arr1 = [1, 2, 3, 4, 5]

arr2 = [5, 4, 3, 2, 1]

arr3 = [1, 2, 3, 2, 1]

arr4 = [1, 1, 1, 1, 1]

print("Array 1:", arr1, "- Monotonic?", is\_monotonic(arr1))

print("Array 2:", arr2, "- Monotonic?", is\_monotonic(arr2))

print("Array 3:", arr3, "- Monotonic?", is\_monotonic(arr3))

print("Array 4:", arr4, "- Monotonic?", is\_monotonic(arr4))