

**Usman Institute of Technology**

**Department of Computer Science Fall 2022**

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Course: Operating Systems (CS312)

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# Tasks:

1. Start five processes using multiprocessing.Process objects , each process will update shared memory Value object using their own target function (callable object to be invoked by the run() method). After execution of all child processes, parent process should display the value of the object.

from multiprocessing import Process, Value

def update\_value(val,i):

    val.value += 1

    print(f"Value after child process {i}:", val.value)

if \_\_name\_\_ == '\_\_main\_\_':

    shared\_value = Value('i', 0)

    print("Value before child processes:", shared\_value.value)

    processes = []

    for i in range(5):

        p = Process(target=update\_value, args=(shared\_value,i,))

        processes.append(p)

        p.start()

    for p in processes:

        p.join()

    print("Value after all child processes:", shared\_value.value)

Output:

Text

Description automatically generated

1. Generate 10 random numbers between 0 and 10, and calculate square of each number such that process#1 calculates square of first five numbers and process#2 calculates square of remaining five numbers, Store the square results in an array (shared memory region) using multiprocessing module.

from multiprocessing import Process, Array

import random

def calculate\_squares(arr, start, end):

    for i in range(start, end):

        arr[i] = arr[i] \*\* 2

if \_\_name\_\_ == '\_\_main\_\_':

    numbers = Array('i', [random.randint(0, 10) for \_ in range(10)])

    print("Original numbers:", numbers[:])

    p1 = Process(target=calculate\_squares, args=(numbers, 0, 5))

    p2 = Process(target=calculate\_squares, args=(numbers, 5, 10))

    p1.start()

    p2.start()

    p1.join()

    p2.join()

    print("Squared numbers:", numbers[:])

Output:

Text

Description automatically generated with medium confidence