CASE STUDY : BANKERS'S PROBLEM

GROUP MEMBER'S :

- 208W1A1292
- 208W1A12A0
- 208W1A12C6

SUBMITTED TO :

DR . T . ANURADHA

PROFESSOR

IT - DEPARTMENT

PROBLEM

A single processor system has three resource types X, Y and Z, which are shared by three processes. There are 5 units of each resource type. Consider the following scenario, where the column alloc denotes the number of units of each resource type allocated to each process, and the column request denotes the number of units of each resource type requested by a process in order to complete execution. **Which of these processes will finish LAST?**

PROCESS	ALLOCATION			REQUEST		
	X	Y	Z	X	Y	Z
P0	1	2	1	1	0	3
P1	2	0	1	0	1	2
P2	2	2	1	1	2	0

ALGORITHM : FOR BANKER'S PROBLEM

STEP 1 : Create 2 matrixes for allocation and request matrixes which are given in the problem and P0,P1,P2 are process's

STEP 2 : Assign the matrix [5, 5, 5] to the Total matrix

STEP 3 : Now add all column wise elements together in allocation matrix and assign each sum of column values to the Total_allocation matrix

STEP 4 : Now subtract the total and total_allocation matrixes and assign the resultant matrix to the Available matrix

STEP 5 : now compare the available matrix and process allocation if it is greater then add both the matrixes and assign it to the Available matrix.

STEP 6 : repeat the step 5 until all the process is in safe sequence

STEP 7 : print the Safe Sequence

According to question:

Total = [X Y Z] = [5 5 5]
Total _Alloc = [X Y Z] = [5 4 3]

Now,
Available = Total – Total_Alloc
Available = [5 5 5] – [5 4 3]
Available = [0 1 2]

Step-01:

With the instances available currently, only the requirement of the process P1 can be satisfied.
So, process P1 is allocated the requested resources.
It completes its execution and then free up the instances of resources held by it. Then,

Available = [0 1 2] + [2 0 1]
Available = [2 1 3]

Step-02:

With the instances available currently, only the requirement of the process Po can be satisfied.
So, process Po is allocated the requested resources.
It completes its execution and then free up the instances of resources held by it.Then,

Available = [2 1 3] + [1 2 1]
Available = [3 3 4]

Step-03:

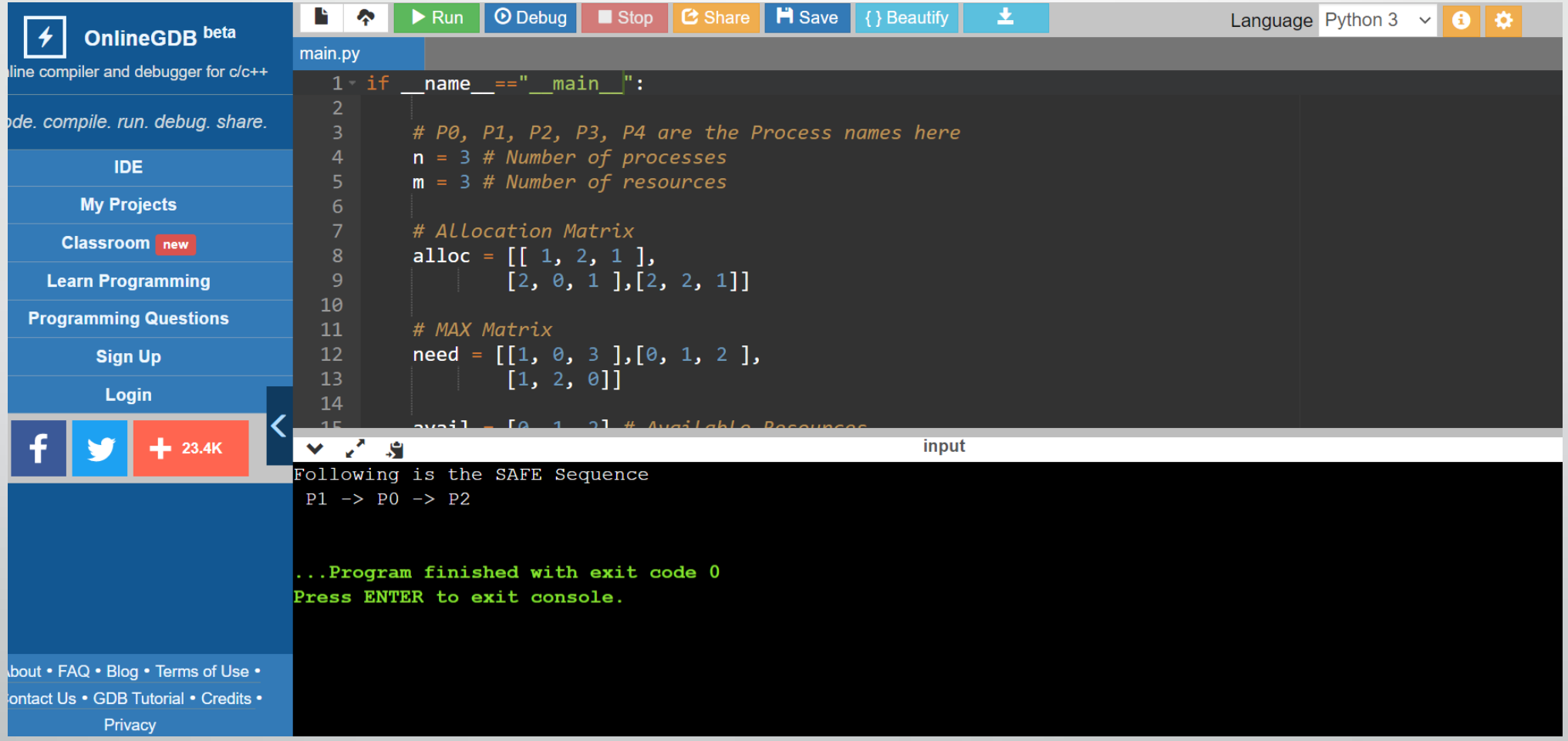
With the instances available currently, the requirement of the process P2 can be satisfied.
So, process P2 is allocated the requested resources.
It completes its execution and then free up the instances of resources held by it. Then,

Available = [3 3 4] + [2 2 1]
Available = [5 5 5]

Thus,
There exists a safe sequence P1, P0, P2 in which all the processes can be executed.
So, the system is in a safe state.

Process P2 will be executed at last.

OUTPUT :


OnlineGDB beta
line compiler and debugger for c/c++
de. compile. run. debug. share.
IDE
My Projects
Classroom new
Learn Programming
Programming Questions
Sign Up
Login
23.4K
Run
Debug
Stop
Share
Save
{ } Beautify
Language
Python 3
main.py
1 if __name__=="__main__":
2
3 # P0, P1, P2, P3, P4 are the Process names here
4 n = 3 # Number of processes
5 m = 3 # Number of resources
6
7 # Allocation Matrix
8 alloc = [[1, 2, 1],
9 [2, 0, 1],[2, 2, 1]]
10
11 # MAX Matrix
12 need = [[1, 0, 3],[0, 1, 2],
13 [1, 2, 0]]
14
input
Following is the SAFE Sequence
P1 -> P0 -> P2
...Program finished with exit code 0
Press ENTER to exit console.
bout • FAQ • Blog • Terms of Use •
ontact Us • GDB Tutorial • Credits •
Privacy