①

Assignment No 3 (OS)

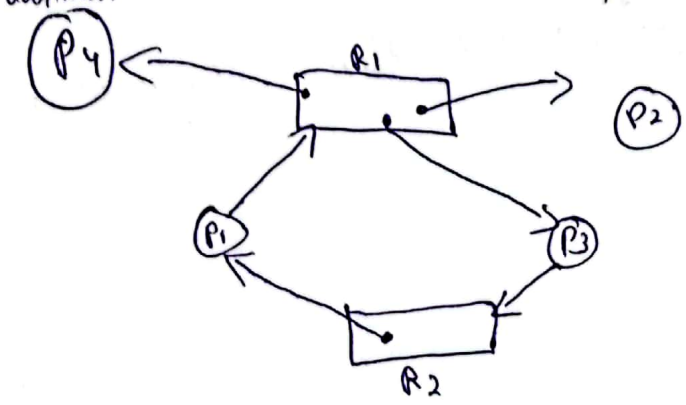
Name: Affan Ahmad

Enrollment: 03-134221-003

BSC65-A

Q No 1)

(a) Resource Allocation Graph (RAG)




| process | Allocated | | Request | | Available | |
|---|---|---|---|---|---|---|
| ~~P4~~ | R1 | R2 | R1 | R2 | R1 | R2 |
| P1 | 0 | 1 | 1 | 0 | 0 | 0 |
| P2 | 1 | 0 | 0 | 0 | 1 | 0 |
| P3 | 1 | 0 | 0 | 1 | 1 | 0 |
| | | | | | 0 | 1 |
| | | | | | 1 | 1 |
| | | | | | 1 | 0 |
| | | | | | 2 | 1 |

Sequence : P2, P1, P3

All process execute successfully ~~also~~ dead lock not appear

R1 have 1 instant

R2 have 2 instant

(b) if P1 demand R1, then there is not a dead lock because process executed successfully

(c) No, The only possible execution sequence is

P2, P1, P3

(2)

(No 2)

(a)

Resources
A = 10
B = 5
C = 7

| Processes | Max Need A B C | Allocated A B C | Remaining Need A B C |
|---|---|---|---|
| $P_0$ | 7 5 3 | 0 1 0 | 7 4 3 |
| $P_1$ | 3 2 2 | 2 0 0 | 1 2 2 |
| $P_2$ | 9 0 2 | 3 0 2 | 6 0 0 |
| $P_3$ | 2 2 2 | 2 1 1 | 0 1 1 |
| $P_4$ | 4 3 3 | 0 0 2 | 4 3 1 |

Available
A B C
3 3 2
+ 2 0 0
$P_1$ ← 5 3 2
2 1 1
$P_3$ ← 7 4 3
0 1 0
$P_0$ ← 7 5 3
3 0 2
$P_2$ ← 10 5 5

Sequence $P_1, P_3, P_0, P_2, P_4$

Remaining Need
↓
Max Need - Allocated

~~Also~~ for check:
~~Resource are~~

Allocation + Available = Work

| A | B | C | : | A | B | C |
|---|---|---|---|---|---|---|
| 10 | 5 | 7 | | 10 | 5 | 7 |

10 5 5
0 0 2
$P_4$ ← 10 5 7
↓
Work

(b) $P_2$ Request (1,0,1) resources.

Available is (10, 5, 75)

Yes, resource will be granted as available resources (10, 5, 57) are greater than request

Or

before solving the question the available resources is (3, 3, 2)

which is also greater than (1, 0, 1)

So process 2 get request immediately.

(3)

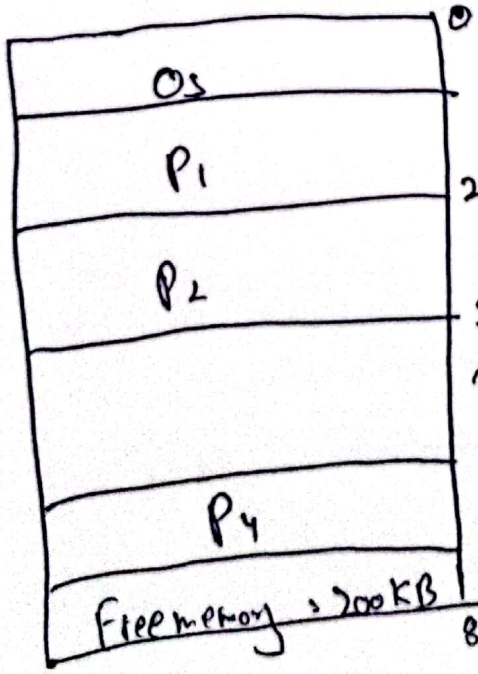
## QNo 3)

### Single Partition Memory Allocation

Consider a computer system with a single partition memory allocation scheme. Total size 800KB

1) P1 require 200 KB memory
2) P2 require 300 KB memory
3) P3 require 400 KB memory
4) P4 require 100 KB memory

Assuming the first fit memory allocation algorithm




// No contiguous block of 400 KB is available so P3 cannot be allocated memory

Internal Fragmentation : Total memory - sum of memory allocated to process

: 800 KB - (200 KB + 300 KB + 100 KB)

: 800 KB - 600 KB

= 200 KB

↓

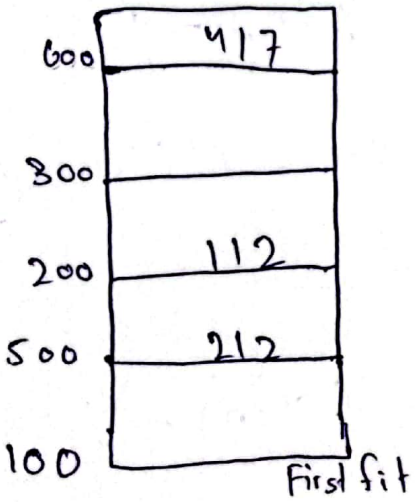
"Internal Fragmentation in the memory Allocation"

Q No 4)

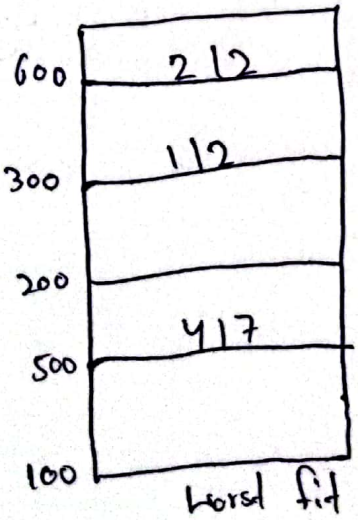
Given 5 partition of 100 KB, 500 KB, 200 KB, 300 KB, 600 KB (In order)

use the first fit, worst fit algorithm to place

212 Kb, 417 Kb, 112 Kb, 426 Kb (In order)




426 will wait




426 will wait

Yes There is common memory partition that is not allocated to any process in both strategies.

QNo.5)

Enter the total memory available (in Bytes) - 800
Enter memory required process 1 (in Bytes) - 200
Memory is allocated for process 1
Do you want to continue (y/n) - y
Enter memory required for process 2 (In Bytes) - 300
Memory is allocated for process 2
Do you want to continue (y/n) - y
Enter memory required for process 3 (In Bytes) - 550
Memory is Full

Total Memory Available : 800

| Process | Memory Allocated |
|---|---|
| 1 | 200 |
| 2 | 300 |

Total Memory Allocated is : 500
Total External Fragmentation is : 300