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Section:- 3

Memory Allocation Assignment

Contents

How to run the program:-	2
Note:-.....	2
Instructions:-	2
Aspects taken into consideration:-.....	5
Aspects that aren't covered in the program:	5

How to run the program:-

- 1-Open NetBeans
- 2-Click file -> open project
- 3-Double click on OS pro2 folder
- 4-Choose memory mapping
- 5-Run

Note:-

- Whenever you want to see memory contents click on show memory button below the table
- Holes don't interfere eg.

	Starting address	Ending address
Hole 1	20	100
Hole 2	90	150

Such cases are not handled

Instructions:-

- 1-You enter the holes' starting address and size.

H/P	start address	end address	size (KB)
H	20	120	100
H	150	450	300
H	470	620	150

2-Then you choose what type of allocation.

3-Enter the process name and its size. As shown in the fig. below the memory contents after choosing first fit allocation allocating p1 whose size =120KB ,and p2 whose size =100KB

H/P	start address	end address	size (KB)
p2	20	120	100
p1	150	270	120
H	270	450	180
H	470	620	150

Allocation Type
☒ first fit ☐ best fit ☐ worst fit

Allocation
 process name process size (KB)

 status *Process allocated*

Deallocation
 process name

 status

4-If the process is allocated then its status should be process allocated.

5-If the process didn't find suitable hole size then its status should be waiting. As shown below after we tried to allocate p3 whose size=270KB there isn't enough space and the process status is waiting, so another process must be deallocated.

H/P	start address	end address	size (KB)
p2	20	120	100
p1	150	270	120
H	270	450	180
H	470	620	150

Allocation Type
☒ first fit ☐ best fit ☐ worst fit

Allocation
 process name process size (KB)

 status *p3 is waiting*

Deallocation
 process name

 status

memory contents
 Address size of hole/process

20	p2 100KB
120	
150	p1 120KB
270	
270	H 180KB
450	
470	H 150KB
620	

6-You should choose which process to deallocate in order to have the sufficient hole size that fits the waiting process. As shown below we chose p1 to be deallocated and the memory contents changed accordingly

H/P	start address	end address	size (KB)
p2	20	120	100
H	150	450	300
H	470	620	150

Memory contents after deallocating p1

20	p2 100KB
120	
150	H 300KB
450	
470	H 150KB
620	

7-After deallocation, re-write the process name and size then click allocate .If the deallocated process left a suitable hole for the waiting process ,then the waiting process will be allocated else it is still waiting. As shown below is the memory contents after re-allocating p3

H/P	start address	end address	size (KB)
p2	20	120	100
p3	150	420	270
H	420	450	30
H	470	620	150

20	p2 100KB
120	
150	p3 270KB
420	
420	H 30KB
450	
470	H 150KB
620	

Concerning other two types of allocation (best fit and worst fit), kindly follow the same steps from 3 to 7.

Aspects taken into consideration:-

1-When two holes are inserted if they are adjacent then they are merged together.

2-when the holes entered in any order, they are arranged in ascending order according to their starting addresses as long as holes don't interfere

3-When a process is deallocated there are some cases handled

- If the process is sandwiched between two holes both are adjacent to the process, then when deallocating -> there is a large hole will be formed its size equals to 1st adjacent hole + process deallocated + 2nd adjacent hole.
- If the process sandwiched between two processes, then a hole is formed of size equals to the deallocated process
- If the process to be deallocated is followed by an adjacent hole, then a hole will be formed its size equals process deallocated + adjacent hole.
- If the process to be deallocated is preceded by an adjacent hole, then a hole will be formed and its size equals to adjacent hole + process deallocated.
- If none of the above are the cases then the process is replaced directly with a hole having the same size.

Aspects that aren't covered in the program:

1-checking whether the user entered hole addresses such that they don't holes don't interfere