

Assignment 4

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Task 1

- 1.1) D
- 1.2) A
- 1.3) C
- 1.4) D
- 1.5) C

Task 2

2.1)

	All Values are in Kb				
1 Megabyte block	1024				
	3x Internal Fregmentation				
Request A: 200Kb	A = 256	256		512	
	3x Internal Fregmentation				
Request B: 40Kb	A = 256	B = 64	64	128	512
	3x Internal Fregmentation				
Request C: 120Kb	A = 256	B = 64	64	C = 128	512
	0x Internal Fregmentation				
Return A	256	B = 64	64	C = 128	512
	0x Internal Fregmentation				
Request D: 60Kb	256	B = 64	D = 64	C = 128	512
	0x Internal Fregmentation				
Return B	256	64	D = 64	C = 128	512
	1x Internal Fregmentation				
Return D	256	128		C = 128	512
	3x Internal Fregmentation				
Return C	1024				

Task 3

- 3.1) 350 is greater than 148 therefor a segment fault occurs.
- 3.2) 220 is greater than 122 therefor a segment fault occurs.
- 3.3) 762 is less than 812 therefor the physical address is: $770 + 762 = 1532$.
- 3.4) 300 is less than 408 therefor the physical address is: $1582 + 300 = 1882$.
- 3.5) 237 is less than 510 therefor the physical address is: $1990 + 237 = 2227$.

Task 4

4.1) proportional allocation algorithm states that for each process there must be "A" amount of frames allocated.

The formula for this is $A = (s_i / S) * m$

s_i = size of process p_i

S = sum of all the sizes of all the processes

M = number of frames in the system

P1: Number of frames required is: $A = (30 / (30 + 90 + 60 + 120)) * 256 = 25.6$, rounded up to 26 frames

P2: Number of frames required is: $A = (90 / (30 + 90 + 60 + 120)) * 256 = 76.8$, rounded up to 77 frames

P3: Number of frames required is: $A = (60 / (30 + 90 + 60 + 120)) * 256 = 51.2$, rounded down to 51 frames

P4: Number of frames required is: $A = (120 / (30 + 90 + 60 + 120)) * 256 = 102.4$, rounded down to 102 frames

Task 5

5.1) 16 entries x 4KB per page = 64KB

5.2) 64KB x 4 segments per task = 256KB

5.3) The physical address occupies a total of 24 bits

Converting the hexadecimal value 012ABC to binary gives us: 0000 0001 0010 1010 1011 1100

The maximum physical address space is $= 2^{24} = 16\text{MB}$