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BSCS - 4101

1. There are 8 Jobs (A-H) with respective sizes. Using each Memory Allocation Strategy, allocate a partition to a job. Put the job/s in the Job Queue if there are no available partition for them. Compute for the Internal Fragments, External Fragments, and Memory Utilization (%).

JOBS	A	B	C	D	E	F	G	H
SIZE	5	10	7	3	9	4	6	12

ALLOCATION STRATEGIES	FIXED PARTITIONS						JOB QUEUE	IF	EF	%MU
	10	4	8	15	6	12				
FIRST FIT	A	D	C	B	F	E	G, H	17	0	100.00%
NEXT FIT	A	D	F	B	G	C	E, H	20	0	100.00%
BEST FIT	B	D	C	F	A	E	G, H	17	0	100.00%
WORST FIT	C		D	A	F	B	E, G, H	22	4	92.73%

IF = JOB SIZE – PARTITION OF SIZE

EF = UNUSED MEMORY

%MU = MEMORY USED/TOTAL MEMORY * 100% (Total Memory= 10+4+8+15+6+12=55)

1. First Fit Strategy:

Job A (5): → Partition 10 → IF = 10 – 5 = 5

Job B (10): → Partition 15 → IF = 15 – 10 = 5

Job C (7): → Partition 8 → IF = 8 – 7 = 1

Job D (3): → Partition 4 → IF = 4 – 3 = 1

Job E (9): → Partition 12 → IF = 12 – 9 = 3

Job F (4): → Partition 6 → IF = 6 – 4 = 2

Job G (6) and Job H (12) has no available partitions for these jobs → **Job Queue**

IF = 5 + 5 + 1 + 1 +3 + 2 = **17**

EF = 0, because all partitions are either used or cannot fit any remaining jobs.

MU = All memory is used; thus, MU is 100 %.

2. Next Fit Strategy

Job A (5): → Partition 10 → IF = 10 – 5 = 5

Job B (10): → Partition 15 → IF = 15 – 10 = 5

Job C (7): → Partition 12 → IF = 12 – 7 = 5

Job D (3): → Partition 4 → IF = 4 – 3 = 1

Job F (4): → Partition 8 → IF = 8 – 4 = 4

Job G (6): → Partition 6 → IF = 6 – 6 = 0

Job E (9) and Job H (12) has no available partitions for these jobs → **Job Queue**

IF = 5 + 5 + 5 + 1 +3 + 2 = **17**

EF = 0, because all partitions are either used or cannot fit any remaining jobs.

MU = All memory is used; thus, MU is 100 %.

3. Best Fit Strategy

Job A (5): → Partition 6 → IF = 6 – 5 = 1

Job B (10): → Partition 10 → IF = 10 – 10 = 0

Job C (7): → Partition 8 → IF = 8 – 7 = 1

Job D (3): → Partition 4 → IF = 4 – 3 = 1

Job E (9): → Partition 12 → IF = 12 – 9 = 3

Job F (4): → Partition 15 → IF = 15 – 4 = 11

Job G (6) and Job H (12) has no available partitions for these jobs → **Job Queue**

IF = 1 + 0 + 1 + 1 + 3 + 11 = 17

EF = 0, because all partitions are either used or cannot fit any remaining jobs.

MU = All memory is used; thus, MU is 100 %.

4. Worst Fit Strategy

Job A (5): → Partition 15 → IF = 15 – 5 = 10

Job B (10): → Partition 12 → IF = 12 – 10 = 2

Job C (7): → Partition 10 → IF = 10 – 7 = 3

Job D (3): → Partition 8 → IF = 8 – 3 = 5

Job F (4): → Partition 6 → IF = 6 – 4 = 2

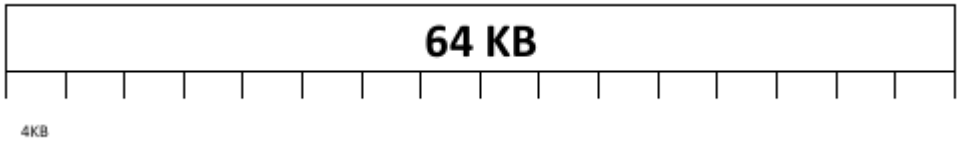
Job E (9), Job G (6) and Job H (12) has no available partitions for these jobs → **Job Queue**

IF = 10 + 2 + 3 + 5 + 2 = 22

EF = 4

MU = 92.47%

2. Using Buddy System, allocate the partition that best fits the jobs.



A. Allocation

Job A (5KB): → Requires 8kb → 64kb → 32kb, 16kb, 8kb

-Allocate 8kb to A

Job B (10kb): → Requires 16kb → 32kb, 16kb

-Allocate 16kb to B

Job C (7kb): → Requires 8kb → Use remaining 8kb

-Allocate 8kb to C

Job D (3 kb): → Requires 4 kb → 16 kb → 8 kb, 4 kb

-Allocate 4 kb to D

Job E (9 kb): → Requires 16 kb → Use remaining 16 kb block

-Allocate 16 kb to E

Job F (4 kb): → Requires 4 kb → Use remaining 4 kb block

-Allocate 4 kb to F

Job G (6 kb): → Requires 8 kb → 32 kb → 16 kb, 8 kb

-Allocate 8 kb to G

B. After Termination & New Allocations

- A Terminates: Frees 8 KB block used by A
- Terminates: Frees 8 KB block used by C

Job H (12 KB): → Requires 16 KB → Use remaining 16 KB block

- Allocate 16 KB to H
- F Terminates: Frees 4 KB block used by F
- Terminates: Frees 4 KB block used by D