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#include <stdio.h>
#define MAX 100

void firstFit(int blockSize[], int m, int processSize[], int n) {
    int allocation[MAX];
    for (int i = 0; i < n; i++)
        allocation[i] = -1;
    for (int i = 0; i < n; i++) {
        for (int j = 0; j < m; j++) {
            if (blockSize[j] >= processSize[i]) {
                allocation[i] = j;
                blockSize[j] -= processSize[i];
                break;
            }
        }
    }
    printf("\nFirst-Fit Allocation:\n");
    printf("Process No.\tProcess Size\tBlock No.\n");
    for (int i = 0; i < n; i++) {
        printf("%d\t\t%d\t\t", i + 1, processSize[i]);
        if (allocation[i] != -1)
            printf("%d\n", allocation[i] + 1);
        else
            printf("Not Allocated\n");
    }
}

void bestFit(int blockSize[], int m, int processSize[], int n) {
    int allocation[MAX];
    for (int i = 0; i < n; i++)
        allocation[i] = -1;
    for (int i = 0; i < n; i++) {
        int bestIdx = -1;
        for (int j = 0; j < m; j++) {
            if (blockSize[j] >= processSize[i]) {
                if (bestIdx == -1 || blockSize[j] < blockSize[bestIdx])
                    bestIdx = j;
            }
        }
        if (bestIdx != -1) {
            allocation[i] = bestIdx;
            blockSize[bestIdx] -= processSize[i];
        }
    }
}

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    }
    if (bestIdx != -1) {
        allocation[i] = bestIdx;
        blockSize[bestIdx] -= processSize[i];
    }
}

printf("\nBest-Fit Allocation:\n");
printf("Process No.\tProcess Size\tBlock No.\n");
for (int i = 0; i < n; i++) {
    printf("%d\t\t%d\t\t", i + 1, processSize[i]);
    if (allocation[i] != -1)
        printf("%d\n", allocation[i] + 1);
    else
        printf("Not Allocated\n");
}
}

void worstFit(int blockSize[], int m, int processSize[], int n) {
    int allocation[MAX];
    for (int i = 0; i < n; i++)
        allocation[i] = -1;
    for (int i = 0; i < n; i++) {
        int worstIdx = -1;
        for (int j = 0; j < m; j++) {
            if (blockSize[j] >= processSize[i]) {
                if (worstIdx == -1 || blockSize[j] > blockSize[worstIdx])
                    worstIdx = j;
            }
        }
        if (worstIdx != -1) {
            allocation[i] = worstIdx;
            blockSize[worstIdx] -= processSize[i];
        }
    }

    printf("\nWorst-Fit Allocation:\n");
    printf("Process No.\tProcess Size\tBlock No.\n");
    for (int i = 0; i < n; i++) {
        printf("%d\t\t%d\t\t", i + 1, processSize[i]);
        if (allocation[i] != -1)
            printf("%d\n", allocation[i] + 1);
        else
            printf("Not Allocated\n");
    }
}

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    }
}
printf("\nWorst-Fit Allocation:\n");
printf("Process No.\tProcess Size\tBlock No.\n");
for (int i = 0; i < n; i++) {
    printf("%d\t\t%d\t\t", i + 1, processSize[i]);
    if (allocation[i] != -1)
        printf("%d\n", allocation[i] + 1);
    else
        printf("Not Allocated\n");
}
}

int main() {
    int blockSize[MAX], processSize[MAX], m, n;
    printf("Enter number of memory blocks: ");
    scanf("%d", &m);
    printf("Enter size of each block:\n");
    for (int i = 0; i < m; i++) {
        printf("Block %d: ", i + 1);
        scanf("%d", &blockSize[i]);
    }
    printf("\nEnter number of processes: ");
    scanf("%d", &n);
    printf("Enter size of each process:\n");
    for (int i = 0; i < n; i++) {
        printf("Process %d: ", i + 1);
        scanf("%d", &processSize[i]);
    }
    int blockSize1[MAX], blockSize2[MAX], blockSize3[MAX];
    for (int i = 0; i < m; i++) {
        blockSize1[i] = blockSize[i];
        blockSize2[i] = blockSize[i];
        blockSize3[i] = blockSize[i];
    }
    firstFit(blockSize1, m, processSize, n);
    bestFit(blockSize2, m, processSize, n);
    worstFit(blockSize3, m, processSize, n);
    return 0;
}

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Enter number of memory blocks: 5

Enter size of each block:

Block 1: 400

Block 2: 700

Block 3: 200

Block 4: 300

Block 5: 600

Enter number of processes: 4

Enter size of each process:

Process 1: 212

Process 2: 517

Process 3: 312

Process 4: 526

First-Fit Allocation:

Process No.	Process Size	Block No.
1	212	1
2	517	2
3	312	5
4	526	Not Allocated

Best-Fit Allocation:

Process No.	Process Size	Block No.
1	212	4
2	517	5
3	312	1
4	526	2

Worst-Fit Allocation:

Process No.	Process Size	Block No.
1	212	2
2	517	5
3	312	2
4	526	Not Allocated

Process returned 0 (0x0)      execution time : 28.651 s

Press any key to continue.