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EXERICSE-23

Construct a C program to implement the first fit algorithm of memory management.

Aim:

To construct a C program to implement the First Fit memory allocation algorithm.

Algorithm:

1. **Initialize Memory Blocks and Processes:**
- Create arrays for memory block sizes and process sizes.
2. **Find First Fit:**
- For each process, find the first memory block that can accommodate it.
- Allocate the process to this block and reduce the block size.
3. **Unallocated Processes:**
- If no suitable block is found, mark the process as unallocated**.**
4. **Display Results:**
- Show the allocation details for each process.

Procedure:

1. Input the sizes of memory blocks and processes.
2. For each process, iterate through all memory blocks to find the first fit.
3. Allocate the process to the first-fit block and adjust the block size.
4. Print the allocation details for each process and memory block.

Code:

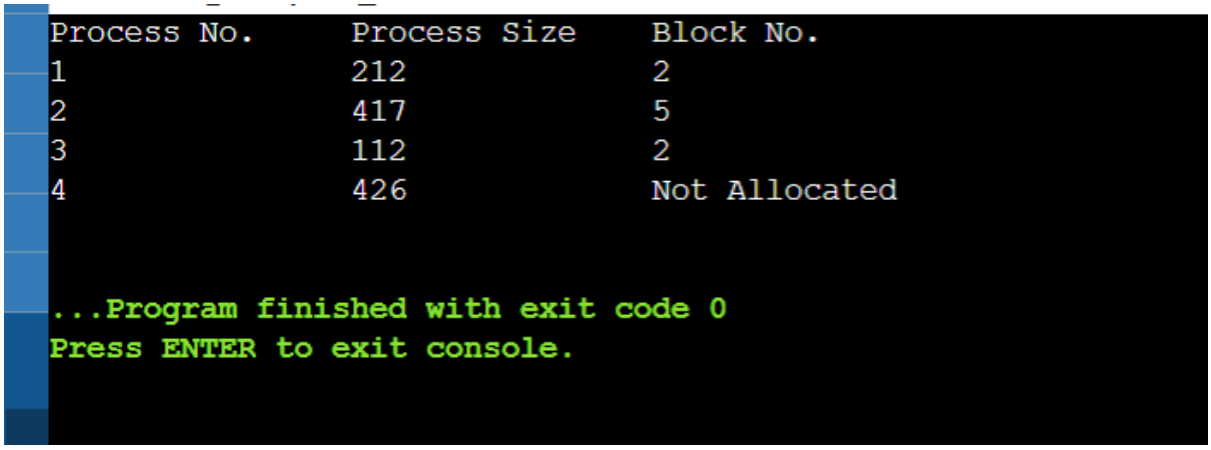
```
#include <stdio.h>
void firstFit(int blockSize[], int m, int processSize[], int n) {
   int allocation[n];
   for (int i = 0; i < n; i++) {
      allocation[i] = -1; // Initialize allocation array
   }
```

```
    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("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[] = {100, 500, 200, 300, 600};
    int processSize[] = {212, 417, 112, 426};
    int m = sizeof(blockSize) / sizeof(blockSize[0]);
    int n = sizeof(processSize) / sizeof(processSize[0]);
    firstFit(blockSize, m, processSize, n);
    return 0;
}
```

Result:

The program successfully implements the First Fit memory allocation algorithm, assigning processes to the first available memory block that fits.

Output:


Process No. Process Size Block No.
1 212 2
2 417 5
3 112 2
4 426 Not Allocated
...Program finished with exit code 0
Press ENTER to exit console.