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

Aim

To implement the First Fit memory allocation algorithm to allocate memory to processes based on their requirements.

Algorithm

1. **Input:**
    - Number of memory blocks and their sizes.
    - Number of processes and their memory requirements.
2. For each process, traverse the memory blocks list sequentially.
3. Assign the process to the first memory block that is large enough to satisfy its requirement.
4. If a process cannot find a suitable block, it remains unallocated.
5. Display the allocation result for each process.

Procedure

1. Initialize arrays for memory block sizes, process sizes, and allocation status.
2. For each process:
    - Check memory blocks sequentially.
    - If a block can satisfy the process size and is free, allocate the process to the block.
3. Print the allocation results.

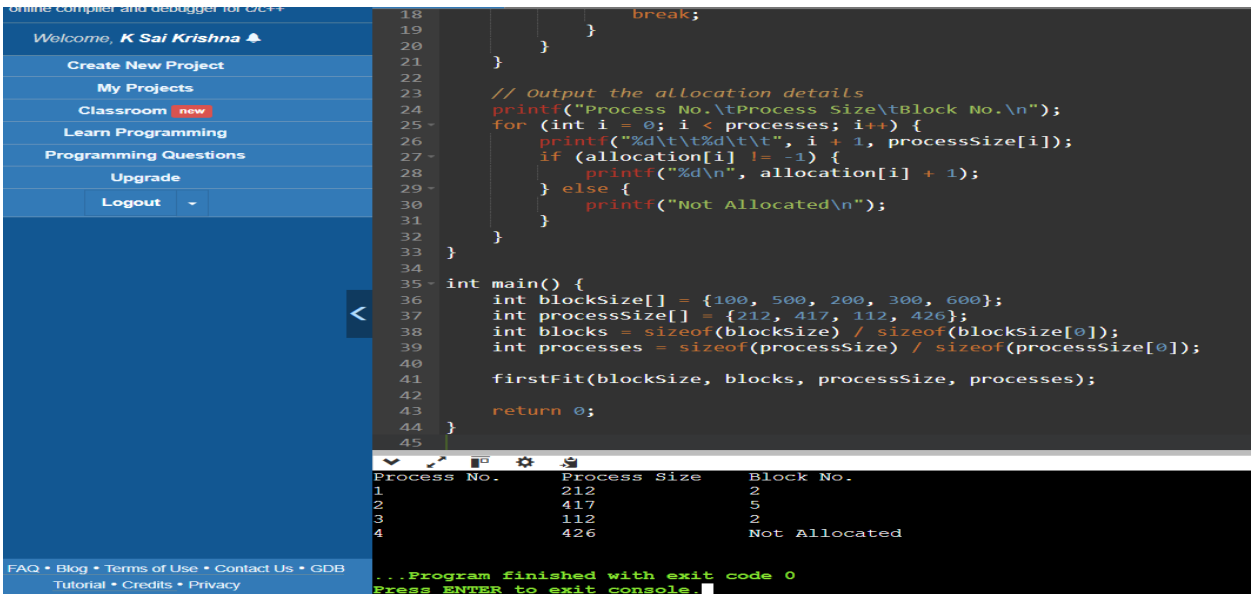
Code:

```
#include <stdio.h>



int main() {

   int nBlocks, nProcesses;

   printf("Enter the number of memory blocks: ");

   scanf("%d", &nBlocks);

   int blockSize[nBlocks], blockAllocated[nBlocks];
```

```
printf("Enter the sizes of the memory blocks: ");
for (int i = 0; i < nBlocks; i++) {
    scanf("%d", &blockSize[i]);
    blockAllocated[i] = 0;
}

printf("Enter the number of processes: ");
scanf("%d", &nProcesses);
int processSize[nProcesses], processAllocated[nProcesses];
printf("Enter the sizes of the processes: ");
for (int i = 0; i < nProcesses; i++) {
    scanf("%d", &processSize[i]);
    processAllocated[i] = -1;
}

for (int i = 0; i < nProcesses; i++) {
    for (int j = 0; j < nBlocks; j++) {
        if (blockSize[j] >= processSize[i] && blockAllocated[j] == 0) {
            blockAllocated[j] = 1;
            processAllocated[i] = j;
            break;
        }
    }
```

```
    }

    printf("\nProcess\tSize\tBlock Allocated\n");
    for (int i = 0; i < nProcesses; i++) {
        printf("%d\t%d\t", i + 1, processSize[i]);
        if (processAllocated[i] != -1)
            printf("%d\n", processAllocated[i] + 1);
        else
            printf("Not Allocated\n");
    }

    return 0;
}
```

Output:



Result

- The program outputs the allocation of processes to memory blocks using the First Fit algorithm.