

EXPERIMENT-22

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

AIM:-

To develop a C program to implement the Best Fit algorithm for memory management, which allocates the smallest memory block that is large enough to satisfy a process's requirement.

ALGORITHM:-

1. Initialize Memory Blocks:
2. Input the total memory blocks and their sizes.
3. Input Process Requirements:
4. Take the number of processes and their respective memory requirements.
5. Allocate Memory Using Best Fit:
6. For each process:
7. Search for the smallest memory block that can accommodate the process.
8. Allocate the block if found and reduce the block size accordingly.
9. Output Results:
10. Display the allocation of processes to memory blocks.
11. If a process cannot be allocated, indicate that.

CODE:-

```
#include <stdio.h>
```

```
void bestFit(int blockSize[], int m, int processSize[], int n) {
```

```
    int allocation[n];
```

```
    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];

    }

}

```

```

printf("Process No.\tProcess Size\tBlock No.\n");

```

```

for (int i = 0; i < n; i++) {

    printf("%d\t%d\t", i + 1, processSize[i]);

    if (allocation[i] != -1)

        printf("%d\n", allocation[i] + 1);

    else

        printf("Not Allocated\n");

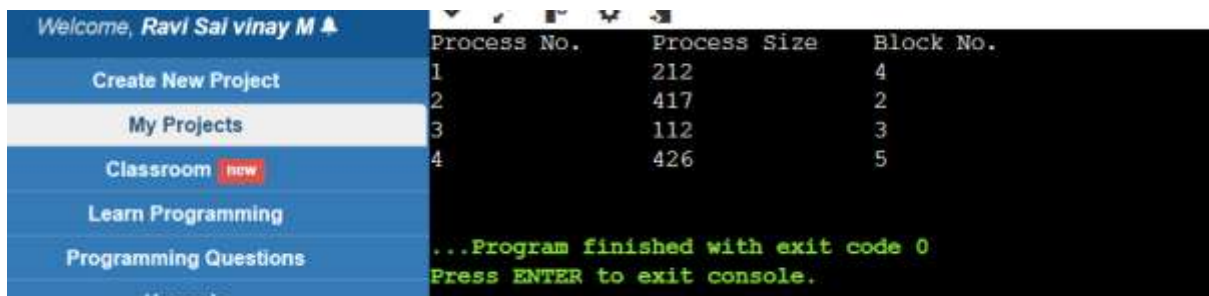
}

```

```
}
```

```
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]);  
  
  
    bestFit(blockSize, m, processSize, n);  
  
    return 0;  
  
}
```

OUTPUT:-



| Process No. | Process Size | Block No. |
|-------------|--------------|-----------|
| 1 | 212 | 4 |
| 2 | 417 | 2 |
| 3 | 112 | 3 |
| 4 | 426 | 5 |

...Program finished with exit code 0
Press ENTER to exit console.

RESULT:-

The program successfully implemented the Best Fit algorithm for memory management, allocating the smallest available memory block that was sufficient for each process. Processes that couldn't fit were marked as "Not Allocated."