Ex. No.: 10a)
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BEST FIT

Aim:
To implement Best Fit memory allocation technique using Python.

Algorithm:
1. Input memory blocks and processes with sizes
2. Initialize all memory blocks as free.
3. Start by picking each process and find the minimum block size that can be assigned to current process
4. If found then assign it to the current process.
5. If not found then leave that process and keep checking the further processes.

Program Code:

```
def best_fit(block_size, process_size):
        n = len(block_size)
        m = len(process_size)
        allocation = [-1] * m

        for i in range(m):
        best_idx = -1
        for j in range(n):
        if block_size[j] >= process_size[i]:
                if best_idx == -1 or block_size[j] < block_size[best_idx]:
                best_idx = j
        if best_idx != -1:
        allocation[i] = best_idx + 1  # 1-based indexing for block number
        block_size[best_idx] -= process_size[i]

        # Output
        print("\nProcess No.\tProcess Size\tBlock No.")
        for i in range(m):
        print(f"{i + 1}\t\t{process_size[i]}\t\t", end=")
        if allocation[i] != -1:
        print(f"{allocation[i]}")
        else:
        print("Not Allocated")
```

```
# Input from user
block_size = []
process_size = []

nb = int(input("Enter number of memory blocks: "))
for i in range(nb):
        size = int(input(f"Enter size of block {i + 1}: "))
        block_size.append(size)

np = int(input("\nEnter number of processes: "))
for i in range(np):
        size = int(input(f"Enter size of process {i + 1}: "))
        process_size.append(size)

# Call the function
best_fit(block_size, process_size)
```

OUTPUT:

```
Enter number of memory blocks: 5
Enter size of block 1: 200
Enter size of block 2: 100
Enter size of block 3: 500
Enter size of block 4: 300
Enter size of block 5: 700

Enter number of processes: 4
Enter size of process 1: 212
Enter size of process 2: 654
Enter size of process 3: 427
Enter size of process 4: 112

Process No.     Process Size    Block No.
1               212             4
2               654             5
3               427             3
4               112             1
```

RESULT:

Hence, Best Fit memory allocation technique using Python has been implemented.