Operating Systems
CT-353

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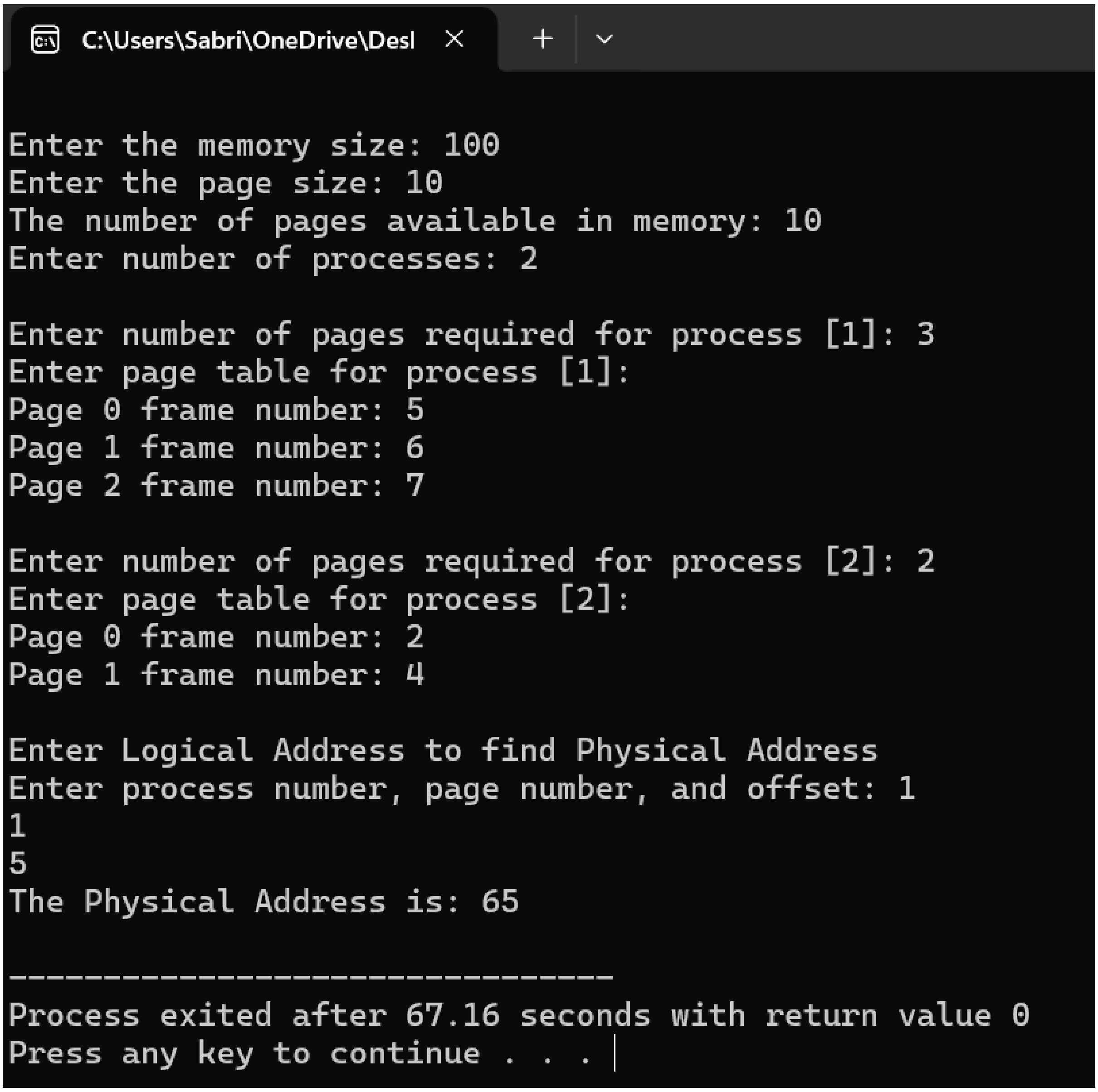
Lab 10:

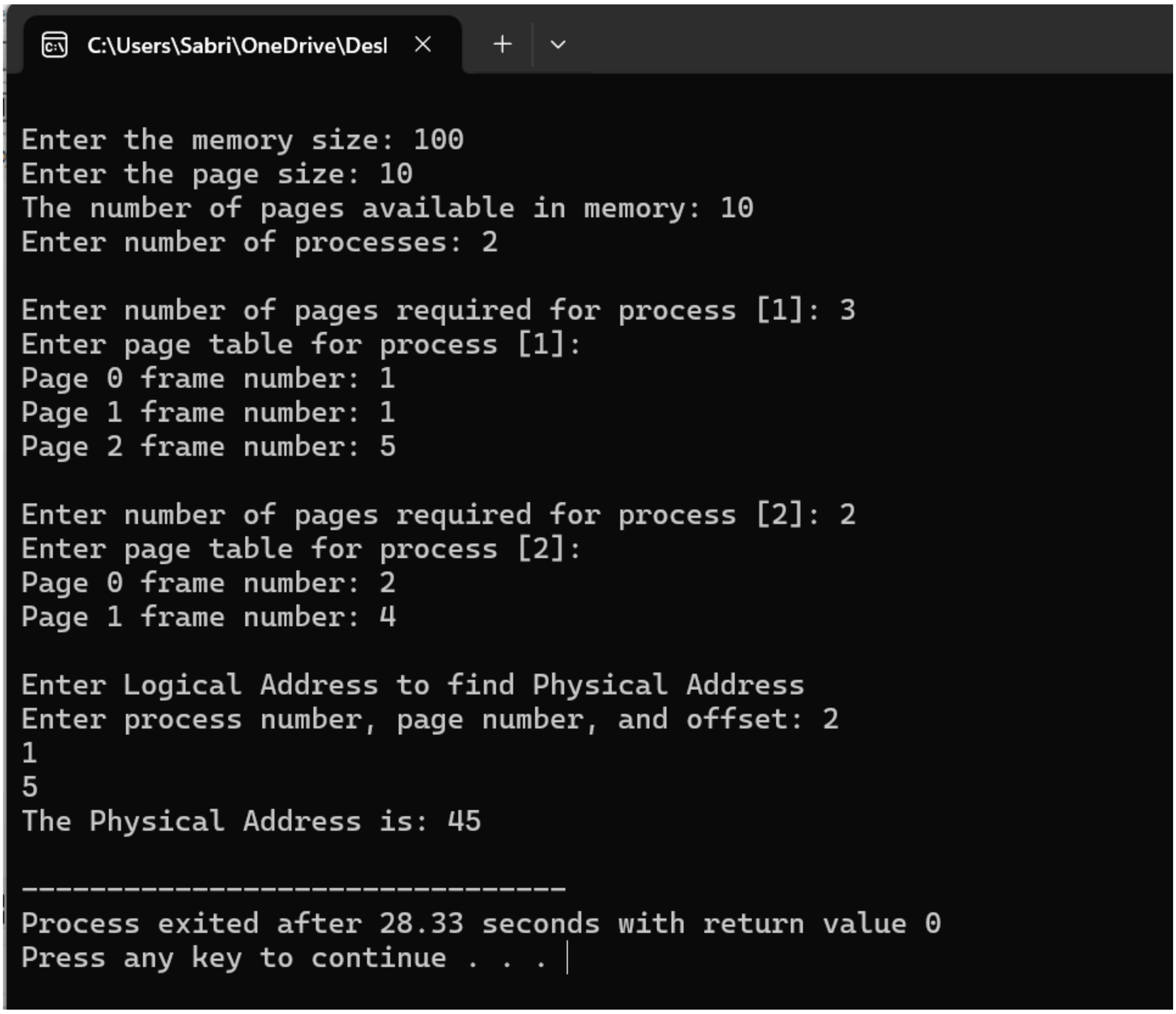
MEMORY MANAGEMENT Techniques

```
#include <stdio.h>

int main() {
    int ms, ps, nop, np, rempages, i, j, x, y, pa, offset;
    int s[10], fno[10][20];

    printf("\nEnter the memory size: ");
    scanf("%d", &ms);

    printf("Enter the page size: ");
    scanf("%d", &ps);

    nop = ms / ps; // number of pages
    printf("The number of pages available in memory: %d\n", nop);

    printf("Enter number of processes: ");
    scanf("%d", &np);

    rempages = nop;

    // Page table entry input for each process
    for (i = 1; i <= np; i++) {
        printf("\nEnter number of pages required for process [%d]: ",
i);
        scanf("%d", &s[i]);

        if (s[i] > rempages) {
            printf("Memory is Full\n");
            break;
        }

        rempages -= s[i];
        printf("Enter page table for process [%d]:\n", i);

        for (j = 0; j < s[i]; j++) {
            printf("Page %d frame number: ", j);
            scanf("%d", &fno[i][j]);
        }
    }

    // Logical to physical address conversion
    printf("\nEnter Logical Address to find Physical Address");
    printf("\nEnter process number, page number, and offset: ");
    scanf("%d %d %d", &x, &y, &offset);

    if (x > np || y >= s[x] || offset >= ps) {
        printf("Invalid Process or Page Number or Offset\n");
    } else {
        pa = fno[x][y] * ps + offset;
        printf("The Physical Address is: %d\n", pa);
    }

    return 0;
}
```

Output:



```
Enter the memory size: 100
Enter the page size: 10
The number of pages available in memory: 10
Enter number of processes: 2

Enter number of pages required for process [1]: 3
Enter page table for process [1]:
Page 0 frame number: 5
Page 1 frame number: 6
Page 2 frame number: 7

Enter number of pages required for process [2]: 2
Enter page table for process [2]:
Page 0 frame number: 2
Page 1 frame number: 4

Enter Logical Address to find Physical Address
Enter process number, page number, and offset: 1
1
5
The Physical Address is: 65

--------------------------------
Process exited after 67.16 seconds with return value 0
Press any key to continue . . .
```



```
Enter the memory size: 100
Enter the page size: 10
The number of pages available in memory: 10
Enter number of processes: 2

Enter number of pages required for process [1]: 3
Enter page table for process [1]:
Page 0 frame number: 1
Page 1 frame number: 1
Page 2 frame number: 5

Enter number of pages required for process [2]: 2
Enter page table for process [2]:
Page 0 frame number: 2
Page 1 frame number: 4

Enter Logical Address to find Physical Address
Enter process number, page number, and offset: 2
1
5
The Physical Address is: 45

--------------------------------
Process exited after 28.33 seconds with return value 0
Press any key to continue . . .
```