

OPERATING SYSTEMS (CT-353) LAB 14

NAME: Ajiya Anwar

ROLL NO: DT-22006

CODE:

Indexed:

```
#include <stdio.h>

#include <stdlib.h>

int main()
{
    int f[50], i, k, j, indexBlock[50], n, c, p;

    // Initialize all blocks as free
    for(i = 0; i < 50; i++)
        f[i] = 0;

    do {
        printf("Enter index block: ");
        scanf("%d", &p);

        if(f[p] == 0) {
            f[p] = 1;
            printf("Enter number of blocks for the file: ");
            scanf("%d", &n);
        } else {
            printf("Block already allocated!\n");
            continue;
        }

        printf("Enter the blocks to be indexed:\n");
        for(i = 0; i < n; i++)
            scanf("%d", &indexBlock[i]);
```

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```
// Check if any of the blocks are already allocated
for(i = 0; i < n; i++) {
    if(f[indexBlock[i]] == 1) {
        printf("Block %d is already allocated!\n", indexBlock[i]);
        f[p] = 0; // deallocate index block
        for(j = 0; j < i; j++)
            f[indexBlock[j]] = 0;
        goto skip;
    }
}

// Allocate the blocks
for(i = 0; i < n; i++)
    f[indexBlock[i]] = 1;

printf("\nAllocated successfully.\n");
printf("File indexed. Mapping:\n");
for(i = 0; i < n; i++)
    printf(" %d -> %d\n", p, indexBlock[i]);

skip:
printf("\nEnter 1 to enter more files and 0 to exit: ");
scanf("%d", &c);

} while(c == 1);

return 0;
}
```

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OUTPUT:

```
C:\Users\Sabri\OneDrive\Desktop >
Enter index block: 4 3
Enter number of blocks for the file: Enter the blocks to be indexed
10 12 14

Allocated successfully.
File indexed. Mapping:
4 -> 10
4 -> 12
4 -> 14

Enter 1 to enter more files and 0 to exit: 0

-----
Process exited after 23.53 seconds with return value 0
Press any key to continue . . . |
```

CODE:

linked

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

```
#include <stdlib.h>
```

```
int main() {
```

```
    int f[50], p, i, j, a, st, len, n, c, k;
```

```
    // Initialize all disk blocks to free
```

```
    for(i = 0; i < 50; i++)
```

```
        f[i] = 0;
```

```
    printf("Enter how many blocks are already allocated: ");
```

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```
scanf("%d", &p);
```

```
printf("Enter the block numbers that are already allocated:\n");
```

```
for(i = 0; i < p; i++) {
```

```
    scanf("%d", &a);
```

```
    f[a] = 1;
```

```
}
```

```
do {
```

```
    printf("\nEnter the starting index block and length: ");
```

```
    scanf("%d%d", &st, &len);
```

```
    k = len;
```

```
    for(j = st; j < (st + k); j++) {
```

```
        if(f[j] == 0) {
```

```
            f[j] = 1;
```

```
            printf("%d -> Allocated\n", j);
```

```
        } else {
```

```
            printf("%d -> File is already allocated\n", j);
```

```
            k++; // Extend range to allocate full length
```

```
        }
```

```
    }
```

```
    printf("Do you want to enter another file? (Yes-1 / No-0): ");
```

```
    scanf("%d", &c);
```

```
} while(c == 1);
```

```
return 0;
```

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```
}
```

OUTPUT:

```
C:\Users\Sabri\OneDrive\Desktop >
Enter how many blocks are already allocated: 3
Enter the block numbers that are already allocated:
3 4 5

Enter the starting index block and length: 2 4
2 -> Allocated
3 -> File is already allocated
4 -> File is already allocated
5 -> File is already allocated
6 -> Allocated
7 -> Allocated
8 -> Allocated
Do you want to enter another file? (Yes-1 / No-0): 0

-----
Process exited after 25.66 seconds with return value 0
Press any key to continue . . . |
```

CODE:

sequential

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

int main()
{
    int f[50], i, st, j, len, c;

    // Initialize all blocks as free (0)
    for(i = 0; i < 50; i++)
        f[i] = 0;

    do {
        printf("\nEnter the starting block & length of file: ");
```

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```
scanf("%d%d", &st, &len);

// Check if blocks are available
for(j = st; j < (st + len); j++) {
    if(f[j] == 0) {
        f[j] = 1;
        printf("\n%d -> Allocated", j);
    } else {
        printf("\nBlock %d is already allocated!", j);
        break;
    }
}

if(j == (st + len))
    printf("\nThe file is allocated to disk successfully.");

printf("\nDo you want to enter more files? (Yes - 1 / No - 0): ");
scanf("%d", &c);

} while(c == 1);

return 0;
}
```

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OUTPUT:

```
C:\Users\Sabri\OneDrive\Desktop  ×  +  v

Enter the starting block & length of file: 5 4

5 -> Allocated
6 -> Allocated
7 -> Allocated
8 -> Allocated
The file is allocated to disk successfully.
Do you want to enter more files? (Yes - 1 / No - 0): 1

Enter the starting block & length of file: 5 4

Block 5 is already allocated!
Do you want to enter more files? (Yes - 1 / No - 0): 0

-----
Process exited after 47.76 seconds with return value 0
Press any key to continue . . . |
```