Noman Ahmed

DT-22032

Operating System (CT-353)

Lab no 14

Noman Ahmed

DT-22032

1) Implement the above code and paste the screen shot of the output.

CODE:

A) SEQUENTIAL

```c
#include <stdio.h>

int main() {
    int f[50] = {0}; // Block status: 0 = free, 1 = allocated
    int i, st, len, j, c;

    do {
        printf("\nEnter the starting block and length of the file: ");
        scanf("%d %d", &st, &len);

        int allocated = 1;
        for (j = st; j < st + len; j++) {
            if (f[j] == 1) {
                printf("Block %d is already allocated.\n", j);
                allocated = 0;
```

Noman Ahmed

DT-22032

```c
            break;

        }

    }


    if (allocated) {

        for (j = st; j < st + len; j++) {

            f[j] = 1;

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

        }

        printf("The file has been allocated.\n");

    }


    printf("Do you want to enter more files? (1 for Yes / 0 for No): ");

    scanf("%d", &c);


} while (c == 1);


return 0;

}
```

Noman Ahmed
DT-22032

OUTPUT:

```
Enter the starting block and length of the file: 4
2
4 -> Allocated
5 -> Allocated
The file has been allocated.
Do you want to enter more files? (1 for Yes / 0 for No): 0

--------------------------------
Process exited after 16.73 seconds with return value 0
Press any key to continue . . .
```

B) Indexed

```c
#include <stdio.h>

int main() {
    int f[50] = {0};
    int inde[50];
    int i, n, p, c;

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

        if (f[p] == 1) {
            printf("Block already allocated.\n");
```

Noman Ahmed
DT-22032

```
        continue;

    }


    f[p] = 1;

    printf("Enter number of blocks needed: ");

    scanf("%d", &n);


    printf("Enter the block numbers:\n");

    int valid = 1;

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

        scanf("%d", &inde[i]);

        if (f[inde[i]] == 1) {

            printf("Block %d already allocated.\n", inde[i]);

            valid = 0;

        }

    }


    if (!valid) continue;


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

        f[inde[i]] = 1;

    }
```

Noman Ahmed

DT-22032

```c
        printf("File indexed.\n");

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

            printf("%d -> %d: Allocated\n", p, inde[i]);

        }


        printf("Do you want to enter more files? (1 for Yes / 0 for No): ");

        scanf("%d", &c);


    } while (c == 1);


    return 0;

}
```

Output

```
Enter index block: 4
Enter number of blocks needed: 2
Enter the block numbers:
3
6
File indexed.
4 -> 3: Allocated
4 -> 6: Allocated
Do you want to enter more files? (1 for Yes / 0 for No): 0

--------------------------------
Process exited after 8.971 seconds with return value 0
Press any key to continue . . . ▪
```

Noman Ahmed
DT-22032

C) Linked

```c
#include <stdio.h>

int main() {
    int f[50] = {0};
    int i, j, p, a, st, len, c;

    printf("Enter how many blocks are already allocated: ");
    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("Enter the starting index block and length of the file: ");
        scanf("%d %d", &st, &len);

        int k = len;
```

Noman Ahmed
DT-22032

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

        if (f[j] == 0) {

            f[j] = 1;

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

        } else {

            printf("%d -> Block already allocated. Searching next...\n", j);

            k++; // Extend search to compensate

        }

    }


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

    scanf("%d", &c);


  } while (c == 1);


  return 0;

}
```

Noman Ahmed

DT-22032

Output:

```
Enter how many blocks are already allocated: 3
Enter the block numbers that are already allocated:
5
4
2
Enter the starting index block and length of the file: 2
1
2 -> Block already allocated. Searching next...
3 -> Allocated
Do you want to enter another file? (1 for Yes / 0 for No): 0

-------------------------------
Process exited after 18.38 seconds with return value 0
Press any key to continue . . .
```