LAB-14

Exercise:

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

a) Sequential

PROGRAM:

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

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

    // clrscr();
    for (i = 0; i < 50; i++)
        f[i] = 0;

    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] == 0) {
                f[j] = 1;
                printf("\n%d -> %d", j, f[j]);
            } else {
                printf("\nBlock %d is already allocated!", j);
                allocated = 0;
                break;
            }
        }

        if (allocated)
            printf("\nThe file is allocated to disk.");

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

    } while (c == 1);

    getch();
    return 0;
}
```

OUTPUT:

```
{ gcc lab_14_1.c -o lab_14_1 } ; if ($?) { .\lab_14_1 }

Enter the starting block and length of the file: 5 4

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

Enter the starting block and length of the file: 7 3

Block 7 is already allocated!
Do you want to enter more files? (1 = Yes / 0 = No): 0
PS C:\6th-sems\OS labs>
```

b) Indexed

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

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

   // clrscr();
    for (i = 0; i < 50; i++)
        f[i] = 0;

    do {
        printf("\nEnter index block: ");
        scanf("%d", &indexBlock);

        if (f[indexBlock] == 0) {
            f[indexBlock] = 1;

            printf("Enter number of blocks on index: ");
            scanf("%d", &n);

            printf("Enter block numbers:\n");
            for (i = 0; i < n; i++)
                scanf("%d", &inde[i]);

            int allocated = 1;

            for (i = 0; i < n; i++) {
                if (f[inde[i]] == 1) {
                    printf("Block %d is already allocated!\n", inde[i]);
```

```
                    allocated = 0;
                    break;
                }
            }

            if (allocated) {
                for (j = 0; j < n; j++)
                    f[inde[j]] = 1;

                printf("File Indexed.\n");
                for (k = 0; k < n; k++)
                    printf("%d -> %d : %d\n", indexBlock, inde[k], f[inde[k]]);
            }

        } else {
            printf("Index block already allocated!\n");
        }

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

    } while (c == 1);

    getch();
    return 0;
}
```

OUTPUT:

```
PS C:\6th-sems\OS labs> cd "c:\6th-sems\OS labs\" ; if ($?)
  { gcc lab_14_2.c -o lab_14_2 } ; if ($?) { .\lab_14_2 }

 Enter index block: 10
 Enter number of blocks on index: 3
 Enter block numbers:
 12 13 14
 File Indexed.
 10 -> 12 : 1
 10 -> 13 : 1
 10 -> 14 : 1
 Enter 1 to enter more files and 0 to exit: 1

 Enter index block: 10
 Index block already allocated!
 Enter 1 to enter more files and 0 to exit: 0
PS C:\6th-sems\OS labs>
```

c) Linked

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

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

    clrscr();
    for (i = 0; i < 50; i++)
        f[i] = 0;

    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("\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("\n%d -> %d", j, f[j]);
            } else {
                printf("\n%d -> Block is already allocated", j);
                k++;
            }
        }

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

    } while (c == 1);

    getch();
    return 0;
}
```

OUTPUT:

```
PS C:\6th-sems\OS labs> cd "c:\6th-sems\OS labs\" ; if ($?)
 { gcc lab_14_3.c -o lab_14_3 } ; if ($?) { .\lab_14_3 }
Enter how many blocks are already allocated: 3
Enter the block numbers that are already allocated:
3 5 9

Enter the starting index block and length: 2 4

2 -> 1
3 -> Block is already allocated
4 -> 1
5 -> Block is already allocated
6 -> 1
7 -> 1
Do you want to enter one more file? (1 = Yes / 0 = No): 1

Enter the starting index block and length: 10 3

10 -> 1
11 -> 1
12 -> 1
Do you want to enter one more file? (1 = Yes / 0 = No): 0
```