35. Consider a file system that brings all the file pointers together into an index block. The i th entry in the index block points to the i th block of the file. Design a C program to simulate the file allocation strategy.

```
#include <stdio.h>
#include <stdlib.h>
#define MAX 100
struct File {
    int indexBlock;
    int blocks[20];
    int size;
};
int main() {
    int disk[MAX] = {0}; // 0 = free, 1 = allocated
    int totalBlocks, i, j, block;
    int numFiles;
    struct File files[10];
    printf("Enter total number of disk blocks: ");
    scanf("%d", &totalBlocks);
    printf("Enter number of files: ");
    scanf("%d", &numFiles);
    for (i = 0; i < numFiles; i++) {
        printf("\nEnter number of blocks required for File %d: ", i + 1);
        scanf("%d", &files[i].size);
        // Allocate index block
        do {
            files[i].indexBlock = rand() % totalBlocks;
        } while (disk[files[i].indexBlock] == 1);
        disk[files[i].indexBlock] = 1;
        printf("Index block for File %d is allocated at block: %d\n", i + 1, files[i].indexBlock);
```

```
        // Allocate file blocks
        for (j = 0; j < files[i].size; j++) {
            do {
                block = rand() % totalBlocks;
            } while (disk[block] == 1);

            disk[block] = 1;
            files[i].blocks[j] = block;
        }
        printf("File %d allocation successful.\n", i + 1);
        printf("Index Block: %d\n", files[i].indexBlock);
        printf("Blocks: ");
        for (j = 0; j < files[i].size; j++) {
            printf("%d ", files[i].blocks[j]);
        }
        printf("\n");
    }
    printf("\nDisk Allocation Summary:\n");
    for (i = 0; i < numFiles; i++) {
        printf("\nFile %d:\n", i + 1);
        printf("Index Block: %d\n", files[i].indexBlock);
        printf("File Blocks: ");
        for (j = 0; j < files[i].size; j++) {
            printf("%d ", files[i].blocks[j]);
        }
        printf("\n");
    }
    return 0;
}
```

OUTPUT:

[?2004l

File 'demo.txt' created successfully.

Initial File permissions: rw-r--r--

File permissions changed to 754 (rwxr-xr--).

Updated File permissions: rwxr-xr--

Explanation:

Owner: rwx (read, write, execute)

Group: r-x (read, execute)

Others: r-- (read only)

[?2004h