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

AIM

To design a C program that simulates a **File Allocation Strategy** using an **Index Block**, where all the file pointers are brought together into an index block, and each entry in the index block points to the respective block of the file.

ALGORITHM

1. **Start**
2. Define a structure FileBlock to represent a block in the file.
3. Create an array indexBlock[] to represent the index block that holds pointers to file blocks.
4. Create a function to add a new record to the file and update the index block accordingly.
5. Create a function to display the current file blocks and index block.
6. Create a function to access a specific file block using the index block.
7. **Stop**

PROCEDURE

1. Include necessary libraries (stdio.h for input/output, stdlib.h for dynamic memory management).
2. Define a structure FileBlock to represent each file block (with data).
3. Define an array indexBlock[] to simulate the index block storing pointers to file blocks.
4. Implement functions to add new file blocks (addFileBlock()), display file blocks (displayFile()), and access specific blocks (accessFileBlock()).
5. Initialize the file system and perform operations such as adding file blocks, displaying file contents, and accessing blocks using the index.
6. **End**

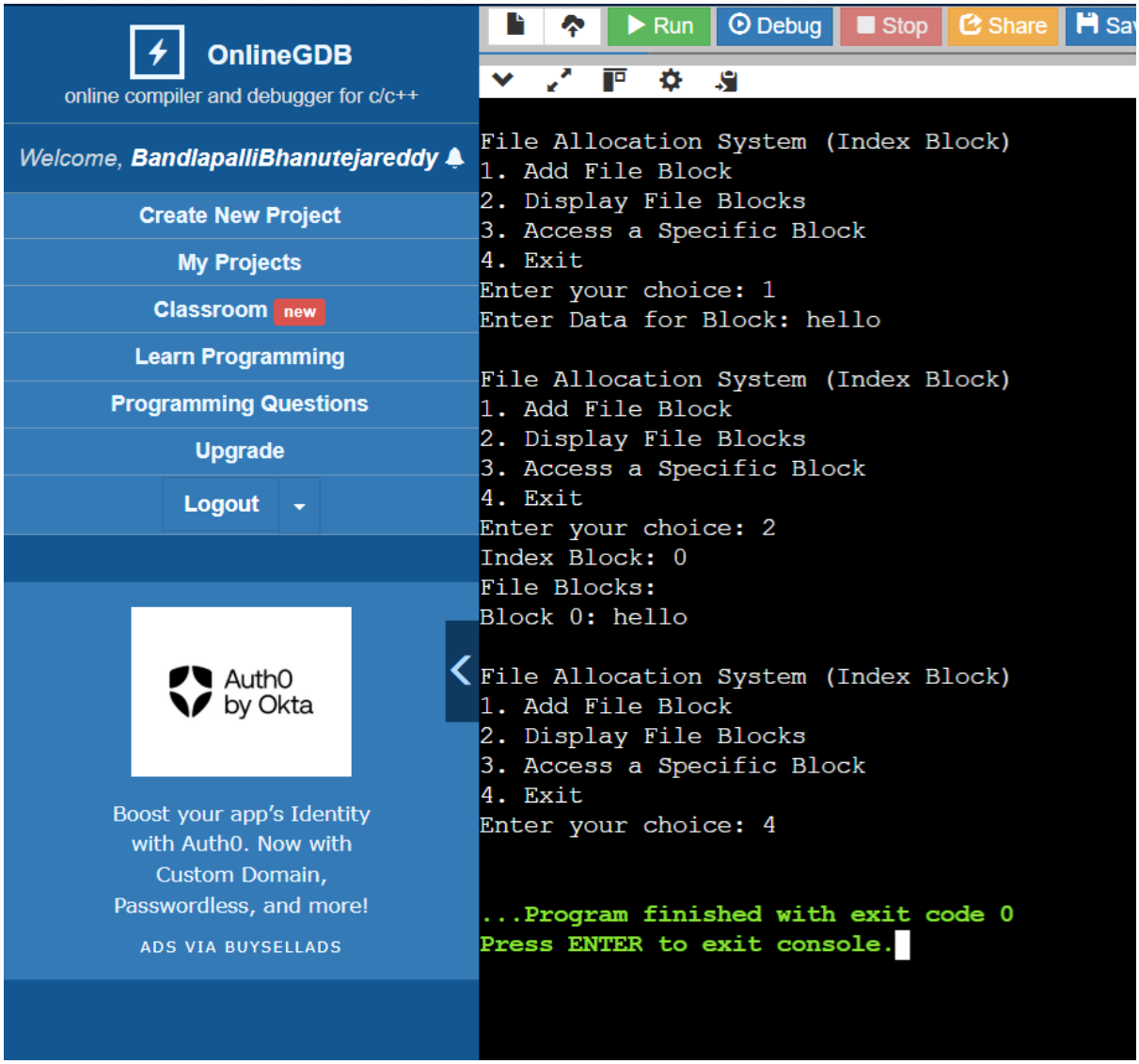
CODE:

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

#define MAX_BLOCKS 10

typedef struct {
   char data[100];
} FileBlock;

FileBlock file[MAX_BLOCKS];
int indexBlock[MAX_BLOCKS];
```

```
int blockCount = 0;

void addFileBlock(const char *data) {
    if (blockCount < MAX_BLOCKS) {
        snprintf(file[blockCount].data, sizeof(file[blockCount].data), "%s", data);
        indexBlock[blockCount] = blockCount;
        blockCount++;
    } else {
        printf("File system is full. Cannot add more blocks.\n");
    }
}

void displayFile() {
    if (blockCount == 0) {
        printf("No blocks in the file.\n");
        return;
    }

    printf("Index Block: ");
    for (int i = 0; i < blockCount; i++) {
        printf("%d ", indexBlock[i]);
    }
    printf("\n");

    printf("File Blocks:\n");
    for (int i = 0; i < blockCount; i++) {
        printf("Block %d: %s\n", indexBlock[i], file[indexBlock[i]].data);
    }
}

void accessFileBlock(int blockNum) {
    if (blockNum >= 0 && blockNum < blockCount) {
        printf("Accessing Block %d: %s\n", indexBlock[blockNum],
file[indexBlock[blockNum]].data);
    } else {
        printf("Invalid block number.\n");
    }
}

int main() {
    int choice, blockNum;
    char data[100];

    while (1) {
        printf("\nFile Allocation System (Index Block)\n");
        printf("1. Add File Block\n");
```

```
        printf("2. Display File Blocks\n");
        printf("3. Access a Specific Block\n");
        printf("4. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);
        getchar();

        switch (choice) {
            case 1:
                printf("Enter Data for Block: ");
                fgets(data, sizeof(data), stdin);
                data[strcspn(data, "\n")] = 0;
                addFileBlock(data);
                break;
            case 2:
                displayFile();
                break;
            case 3:
                printf("Enter Block Number to Access: ");
                scanf("%d", &blockNum);
                accessFileBlock(blockNum);
                break;
            case 4:
                exit(0);
            default:
                printf("Invalid choice. Please try again.\n");
        }
    }

    return 0;
}
```

OUTPUT:


OnlineGDB
online compiler and debugger for c/c++
Welcome, BandlapalliBhanutejareddy
Create New Project
My Projects
Classroom new
Learn Programming
Programming Questions
Upgrade
Logout
Auth0 by Okta
Boost your app's Identity with Auth0. Now with Custom Domain, Passwordless, and more!
ADS VIA BUYSELLADS
Run
Debug
Stop
Share
File Allocation System (Index Block)
1. Add File Block
2. Display File Blocks
3. Access a Specific Block
4. Exit
Enter your choice: 1
Enter Data for Block: hello
File Allocation System (Index Block)
1. Add File Block
2. Display File Blocks
3. Access a Specific Block
4. Exit
Enter your choice: 2
Index Block: 0
File Blocks:
Block 0: hello
File Allocation System (Index Block)
1. Add File Block
2. Display File Blocks
3. Access a Specific Block
4. Exit
Enter your choice: 4
...Program finished with exit code 0
Press ENTER to exit console.