

b) Indexed

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

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

```
#define MAX_BLOCKS 100
```

```
int main() {
```

```
    int memory[MAX_BLOCKS], indexBlock, numBlocks, blocks[50], i, j, choice,  
    flag;
```

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

```
        memory[i] = 0;
```

```
    printf("Indexed File Allocation Simulation\n");
```

```
    while(1) {
```

```
        printf("\nEnter index block: ");
```

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

```
        if(indexBlock < 0 || indexBlock >= MAX_BLOCKS || memory[indexBlock]  
        == 1) {
```

```
            printf("Invalid or already allocated index block.\n");
```

```
            continue;
```

```
        }
```

```
        printf("Enter number of blocks to allocate: ");
```

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

```
        if(numBlocks <= 0 || numBlocks > MAX_BLOCKS - 1) {
```

```
            printf("Invalid number of blocks.\n");
```

```
            continue;
```

```

    }

    printf("Enter block numbers to be allocated:\n");

    flag = 1;

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

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

        if(blocks[i] < 0 || blocks[i] >= MAX_BLOCKS || memory[blocks[i]] == 1
|| blocks[i] == indexBlock) {

            flag = 0;

            break;

        }

    }

    if(flag) {

        memory[indexBlock] = 1;

        for(i = 0; i < numBlocks; i++)

            memory[blocks[i]] = 1;

        printf("File allocated with index block %d pointing to blocks: ",
indexBlock);

        for(i = 0; i < numBlocks; i++)

            printf("%d ", blocks[i]);

        printf("\n");

    } else {

        printf("Allocation failed due to invalid or already allocated block.\n");

    }

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

    scanf("%d", &choice);

    if(choice == 0)

        break;

}

```

```
printf("\nMemory Block Status:\n");  
for(i = 0; i < MAX_BLOCKS; i++) {  
    printf("%d", memory[i]);  
    if((i + 1) % 10 == 0)  
        printf("\n");  
}  
  
return 0;  
}
```

Output

Indexed File Allocation Simulation

Enter index block: 4

Enter number of blocks to allocate: 2

Enter block numbers to be allocated:

3

6

File allocated with index block 4 pointing to blocks: 3 6

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