## c) Linked

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

#define MAX_BLOCKS 100

int main() {
  int memory[MAX_BLOCKS], startBlock, nextBlock, numBlocks, i,
current, choice;

  for(i = 0; i < MAX_BLOCKS; i++)
    memory[i] = 0;

  printf("Linked File Allocation Simulation\n");

  while(1) {
    printf("\nEnter starting block of the file: ");
    scanf("%d", &startBlock);

    if(startBlock < 0 || startBlock >= MAX_BLOCKS ||
memory[startBlock] == 1) {
      printf("Invalid or already allocated starting block.\n");
      continue;
    }

    printf("Enter number of blocks required: ");
    scanf("%d", &numBlocks);

    if(numBlocks <= 0 || numBlocks > MAX_BLOCKS) {
      printf("Invalid number of blocks.\n");
      continue;
    }

    int allocated = 1;
    int fileBlocks[numBlocks];
    fileBlocks[0] = startBlock;
    memory[startBlock] = 1;

    for(i = 1; i < numBlocks; i++) {
      printf("Enter next block: ");
      scanf("%d", &nextBlock);

      if(nextBlock < 0 || nextBlock >= MAX_BLOCKS ||
memory[nextBlock] == 1) {
        allocated = 0;
        break;
      }
```

```
            fileBlocks[i] = nextBlock;
            memory[nextBlock] = 1;
        }

        if(allocated) {
            printf("File allocated: ");
            for(i = 0; i < numBlocks; i++)
                printf("%d -> ", fileBlocks[i]);
            printf("NULL\n");
        } else {
            printf("Allocation failed due to invalid or already allocated
block.\n");
            for(int j = 0; j < i; j++)
                memory[fileBlocks[j]] = 0; // rollback
        }

        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**

```
Linked File Allocation Simulation

Enter starting block of the file: 2
Enter number of blocks required: 2
Enter next block: 4
File allocated: 2 -> 4 -> NULL
Do you want to enter another file? (1 for Yes / 0 for No):
```