Write a C program to simulate the following contiguous memory allocation techniques. (Any one)
a) Worst-fit
b) Best-fit
c) First-fit

```
#include <stdio.h>

#define MAX 10

void firstFit(int blockSize[], int m, int processSize[], int n) {
    int allocation[MAX], usedBlockSize[MAX];

    for (int i = 0; i < n; i++)
        allocation[i] = -1;

    for (int i = 0; i < n; i++) {
        for (int j = 0; j < m; j++) {
            if (blockSize[j] >= processSize[i]) {
                allocation[i] = j;
                usedBlockSize[i] = blockSize[j];
                blockSize[j] -= processSize[i];
                break;
            }
        }
    }

    printf("\nMemory Management Scheme - First-Fit :\n");
    printf("file_no\tfile_size\tblock_no\tblock_size\n");
    for (int i = 0; i < n; i++) {
        printf("  %d\t   %d\t\t", i + 1, processSize[i]);
        if (allocation[i] != -1)
            printf("   %d\t\t   %d\n", allocation[i] + 1, usedBlockSize[i]);
        else
            printf("Not Allocated\t   -\n");
    }
}

void bestFit(int blockSize[], int m, int processSize[], int n) {
```

```
    int allocation[MAX], usedBlockSize[MAX];

    for (int i = 0; i < n; i++)
        allocation[i] = -1;

    for (int i = 0; i < n; i++) {
        int bestIdx = -1;
        for (int j = 0; j < m; j++) {
            if (blockSize[j] >= processSize[i]) {
                if (bestIdx == -1 || blockSize[j] < blockSize[bestIdx])
                    bestIdx = j;
            }
        }

        if (bestIdx != -1) {
            allocation[i] = bestIdx;
            usedBlockSize[i] = blockSize[bestIdx];
            blockSize[bestIdx] -= processSize[i];
        }
    }

    printf("\nMemory Management Scheme - Best-Fit :\n");
    printf("file_no\tfile_size\tblock_no\tblock_size\n");
    for (int i = 0; i < n; i++) {
        printf("  %d\t   %d\t\t", i + 1, processSize[i]);
        if (allocation[i] != -1)
            printf("    %d\t\t   %d\n", allocation[i] + 1, usedBlockSize[i]);
        else
            printf("Not Allocated\t   -\n");
    }
}

void worstFit(int blockSize[], int m, int processSize[], int n) {
    int allocation[MAX], usedBlockSize[MAX];

    for (int i = 0; i < n; i++)
        allocation[i] = -1;

    for (int i = 0; i < n; i++) {
        int worstIdx = -1;
```

```
        for (int j = 0; j < m; j++) {
            if (blockSize[j] >= processSize[i]) {
                if (worstIdx == -1 || blockSize[j] > blockSize[worstIdx])
                    worstIdx = j;
            }
        }

        if (worstIdx != -1) {
            allocation[i] = worstIdx;
            usedBlockSize[i] = blockSize[worstIdx];
            blockSize[worstIdx] -= processSize[i];
        }
    }

    printf("\nMemory Management Scheme - Worst Fit :\n");
    printf("file_no\tfile_size\tblock_no\tblock_size\n");
    for (int i = 0; i < n; i++) {
        printf("  %d\t   %d\t\t", i + 1, processSize[i]);
        if (allocation[i] != -1)
            printf("   %d\t\t   %d\n", allocation[i] + 1, usedBlockSize[i]);
        else
            printf("Not Allocated\t   -\n");
    }
}

int main() {
    int m, n;
    int blockSize1[MAX], blockSize2[MAX], blockSize3[MAX], processSize[MAX];

    printf("Enter number of memory blocks: ");
    scanf("%d", &m);

    printf("Enter number of files: ");
    scanf("%d", &n);

    printf("Enter sizes of %d memory blocks:\n", m);
    for (int i = 0; i < m; i++) {
        scanf("%d", &blockSize1[i]);
    }
```

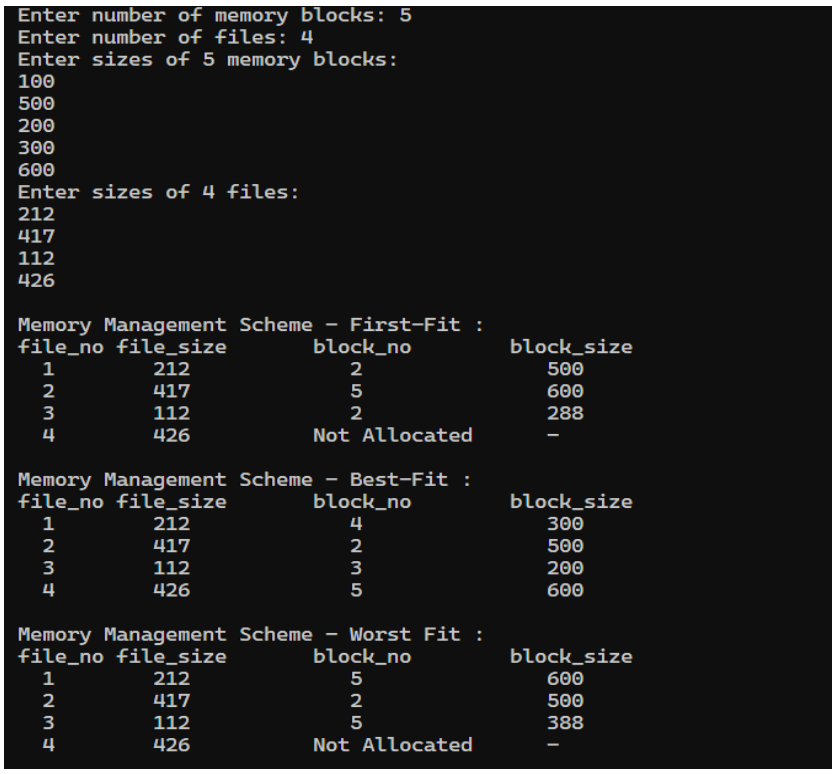
```
    printf("Enter sizes of %d files:\n", n);
    for (int i = 0; i < n; i++) {
        scanf("%d", &processSize[i]);
    }

    for (int i = 0; i < m; i++) {
        blockSize2[i] = blockSize1[i];
        blockSize3[i] = blockSize1[i];
    }


    firstFit(blockSize1, m, processSize, n);
    bestFit(blockSize2, m, processSize, n);
    worstFit(blockSize3, m, processSize, n);

    return 0;
}
```

Output



```
Enter number of memory blocks: 5
Enter number of files: 4
Enter sizes of 5 memory blocks:
100
500
200
300
600
Enter sizes of 4 files:
212
417
112
426

Memory Management Scheme - First-Fit :
file_no file_size       block_no        block_size
  1        212             2               500
  2        417             5               600
  3        112             2               288
  4        426          Not Allocated      -

Memory Management Scheme - Best-Fit :
file_no file_size       block_no        block_size
  1        212             4               300
  2        417             2               500
  3        112             3               200
  4        426             5               600

Memory Management Scheme - Worst Fit :
file_no file_size       block_no        block_size
  1        212             5               600
  2        417             2               500
  3        112             5               388
  4        426          Not Allocated      -
```