```c
#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#define MAX 200


typedef struct dir

{

    char fname[20];

    int start;

    struct dir *next;

} NODE;


NODE *first, *last;

int n, fb, bit[MAX];


void init()

{

    int i;

    printf("Enter total no.of disk blocks:");

    scanf("%d", &n);

    fb = n;

    for (i = 0; i < 10; i++)

    {

        int k = rand() % n;

        if (bit[k] != -2)

        {

            bit[k] = -2;

            fb--;

        }

    }

}
```

```c
void show_bitvector()
{
    int i;
    for (i = 0; i < n; i++) printf("%d ", bit[i]);
    printf("\n");
}


void show_dir()
{
    NODE *p;
    int i;
    printf("File\tChain\n");
    p = first;
    while (p != NULL)
    {
        printf("%s\t", p->fname);
        i = p->start;
        while (i != -1)
        {
            printf("%d->", i);
            i = bit[i];
        }
        printf("NULL\n");
        p = p->next;
    }
}


void create()
{
    NODE *p;
    char fname[20];
    int i, j, nob;
```

```c
printf("Enter file name:");

scanf("%s", fname);

printf("Enter no.of blocks:");

scanf("%d", &nob);

if (nob > fb)

{

   printf("Failed to create file %s\n", fname);

   return;

}

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

{

   if (bit[i] == 0) break;

}

p = (NODE *)malloc(sizeof(NODE));

strcpy(p->fname, fname);

p->start = i;

p->next = NULL;

if (first == NULL) first = p;

else last->next = p;

last = p;

fb -= nob;

j = i + 1;

nob--;

while (nob > 0)

{

   if (bit[j] == 0)

   {

      bit[i] = j;

      i = j;

      nob--;

   }

   j++;
```

```c
    }
    bit[i] = -1;
    printf("File %s created successfully.\n", fname);
}


void delete()
{
    char fname[20];
    NODE *p, *q;
    int nob = 0, i, j;
    printf("Enter file name to be deleted:");
    scanf("%s", fname);
    p = q = first;
    while (p != NULL)
    {
        if (strcmp(p->fname, fname) == 0) break;
        q = p;
        p = p->next;
    }
    if (p == NULL)
    {
        printf("File %s not found.\n", fname);
        return;
    }
    i = p->start;
    while (i != -1)
    {
        nob++;
        j = i;
        i = bit[i];
        bit[j] = 0;
    }
```

```c
        fb += nob;
        if (p == first) first = first->next;
        else if (p == last)
        {
            last = q;
            last->next = NULL;
        }
        else q->next = p->next;
        free(p);
        printf("File %s deleted successfully.\n", fname);
}


int main()
{
    int ch;
    init();
    while (1)
    {
        printf("1.Show bit vector\n");
        printf("2.Create new file\n");
        printf("3.Show directory\n");
        printf("4.Delete file\n");
        printf("5.Exit\n");
        printf("Enter your choice (1-5):");
        scanf("%d", &ch);
        switch (ch)
        {
            case 1: show_bitvector(); break;
            case 2: create(); break;
            case 3: show_dir(); break;
            case 4: delete(); break;
            case 5: exit(0);
```

```
        }
    }
    return 0;
}
```