```
/*
 1
 2 Program 1:
 3 Design, Develop and Implement a menu driven Program in C for the following
 4 array operations:
 5 a. Creating an array of N Integer Elements
 6 b. Display of array Elements with Suitable Headings
   c. Inserting an Element (ELEM) at a given valid Position (POS)
 7
 8 d. Deleting an Element at a given valid Position (POS)
 9
   e. Exit.
10
   * /
11
12 #include <stdio.h>
13 #include <stdlib.h>
14
15 /*
16 Maximum size of the array is defined as 10.
17 It Can be changed according to the needs.
18 */
19
   #define MAX 10
20
21 /*
22 a[MAX] represents Maximum array size;
23 pos:position, x:element to be inserted/deleted
24
   * /
25
26
   int a[MAX],pos,x;
27
28
   int n = 0;
29
30
   //defining all the 4 operations to be done as functions.
31 void create();
32 void display();
33 void insert();
34 void delete();
35
36
37
   void main()
38
   {
39
        int choice;
        while(1)
40
41
                printf("\n\n ****MENU**** ");
42
43
                printf("\n 1. Create an array of N integers");
44
45
                printf("\n 2. Display of array elements");
46
                printf("\n 3. Insert an element at a given Position");
                printf("\n 4. Delete an element at a given Position");
47
48
                printf("\n 5. Exit");
49
50
                printf("\n\n Enter your choice: ");
51
                scanf("%d", &choice);
52
53
                switch(choice)
54
55
                    case 1: create();
56
                            break;
57
                    case 2: display();
58
                            break;
59
                    case 3: insert();
60
                            break;
61
                    case 4: delete();
62
                            break;
63
                    case 5: exit(1);
64
                            break;
65
66
                    default: printf("\n Please enter a valid choice:");
```

```
67
 68
             }//end of while
 69
 70
 71
    }//end of main function
 72
 73
 74
    create function -
 75
    Takes in number of elements and elements to be inserted as input
 76
 77
 78
    void create()
 79
 80
         int i;
         printf("\n Enter the number of elements: ");
 81
 82
         scanf("%d",&n);
 83
 84
         printf("\n Enter the elements:");
 85
         for(i=0;i<n;i++)</pre>
 86
 87
             scanf("%d",&a[i]);
 88
 89
    }
 90
 91
 92 Display function -
 93 First checks if the array is empty.
 94 If not, displays all the elements in the array.
 95
 96
 97
    void display()
 98
 99
         int i;
100
         if(n==0)
                                    //if n is zero, then array is empty.
101
102
                 printf("\n Array is empty");
103
                 return;
             }
104
105
         printf("\n Array elements are: ");
106
107
         for(i=0;i<n;i++)
108
         printf("%d\t",a[i]); // prints all the elements in the array.
109
110
111
112
     insert function-
     First checks if the array is full. If yes, array full message is displayed.
113
     If not, it takes the element to be inserted at a prescribed position until
114
     the position is less than the size of the array.
115
116
     This is done using do-while loop.
117
     * /
118
119
    void insert()
120
         int i;
121
122
         if(n==MAX)
123
124
                 printf("\n Array is full.Insertion not possible");
125
                 return;
126
127
128
129
         do
130
131
                 printf("\n Enter valid position where element to be inserted:");
132
                 scanf("%d",&pos);
```

```
133
134
         while(pos>n);
135
136
         printf("\n Enter the value to be inserted:");
137
         scanf("%d",&x);
138
139
         for(i=n-1;i>=pos;i--)
140
141
             a[i+1] = a[i];
142
             a[pos] = x;
143
144
             n = n+1;
145
             display();
146
    }
147
148
    /*
149 delete function-
150 It first checks if the array is empty. If yes, array empty message is displayed.
151 If not, it keeps on taking the element to be deleted at a prescribed position
152 until the position is less than or equal to the size of the array.
153 This is done using do-while loop.
154
155
156
    void delete()
157
158
         int i;
159
         if(n==0)
160
161
162
                 printf("\n Array is empty");
163
                 return;
             }
164
165
166
         do
167
168
                 printf("\n Enter valid position from where element to be deleted:");
169
                 scanf("%d",&pos);
170
171
         while(pos>=n);
172
173
         x=a[pos];
174
         printf("\n Deleted element is %d\n",x);
175
176
         for(i=pos;i<n-1;i++)</pre>
177
178
                 a[i]=a[i+1];
179
180
181
         n=n-1;
182
         display();
183
```

****MENU****

- 1. Create an array of N integers
- 2. Display of array elements
- 3. Insert an element at a given Position
- 4. Delete an element at a given Position
- 5. Exit

Enter your choice: 1

Enter the number of elements: 5

Enter the elements:10 20 30 40 50

****MENU****

- 1. Create an array of N integers
- 2. Display of array elements
- 3. Insert an element at a given Position
- 4. Delete an element at a given Position
- 5. Exit

Enter your choice: 3

Enter valid position where element to be inserted:2

Enter the value to be inserted:456

Array elements are: 10 20 456 30 40 50

****MENU****

- 1. Create an array of N integers
- 2. Display of array elements
- 3. Insert an element at a given Position
- 4. Delete an element at a given Position
- 5. Exit

Enter your choice: 3

Enter valid position where element to be inserted:5

Enter the value to be inserted:121

Array elements are: 10 20 456 30 40 121 50

****MENU****

- 1. Create an array of N integers
- 2. Display of array elements
- 3. Insert an element at a given Position
- 4. Delete an element at a given Position
- 5. Exit

Enter your choice: 4

Enter valid position from where element to be deleted:1

Deleted element is 20

Array elements are: 10 456 30 40 121 50

****MENU****

- 1. Create an array of N integers
- 2. Display of array elements
- 3. Insert an element at a given Position
- 4. Delete an element at a given Position
- 5. Exit

Enter your choice: 4

Enter valid position from where element to be deleted:4

Deleted element is 121

Array elements are: 10 456 30 40 50

****MENU****

- 1. Create an array of N integers
- 2. Display of array elements
- 3. Insert an element at a given Position
- 4. Delete an element at a given Position
- 5. Exit

Enter your choice: 4

Enter valid position from where element to be deleted:1

Deleted element is 456

Array elements are: 10 30 40 50

****MENU****

- 1. Create an array of N integers
- 2. Display of array elements
- 3. Insert an element at a given Position
- 4. Delete an element at a given Position
- 5. Exit

Enter your choice: 5