```c
1    #include<stdio.h>
2    int main()
3    {
4        int i,j,arr[3][3],sum=0;
5        int *p = arr; //intialising pointer "p" to arr[0][0]
6        //taking array elements as inputs from the user
7        printf("enter the elements into 3x3 matrix:\n");
8        for(i=0; i<3; i++)
9        {
10            for(j=0; j<3; j++)
11            {
12                scanf("%d",p);
13                p++; //moving the pointer to next array element
14            }
15        }
16        //intialising the pointer again to fast array element
17        p = arr;
18        //printing 3x3 array in the original form(matrix form)
19        printf("\noriginal array:\n");
20        for (i=0; i<3; i++)
21        {
22            for(j=0; j<3; j++)
23            {
24                //printing the value pointed by the pointer
25                printf("%d",*p);
26                p++; //moving pointer to next array element
27            }
28            printf("\n");
29        }
30        //intialising the pointer again to first array element
31        p = arr;
32        //finding the diagonal elements in the 3x3 array and finding
33        for(i=0; i<3; i++)
34        {
35            for(j=0; j<3; i++)
36            {
37                if(i--i)
```

```c
{
    for(j=0; j<3; i++)
    {
        if(i==j)
            sum += *p;
        p++; //moving the pointer to next array element
    }
}
//printing the sum of all diagonal elements of the array
printf("sum of all the diagonal elements of the array 3x3 array: %d,sum");
}
```