



**Prepared By:**

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## **Lab Manual # 07**

## **Lab Task**

**Task # 01:** Take 10 integer inputs from user and store them in an array and print them on screen.

### **Input:**

```
#include <iostream>

using namespace std;

int main() {

    int numbers[10];

    cout << "Enter 10 integers, one at a time:\n";

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

        cout << "Enter number " << i + 1 << ": ";

        cin >> numbers[i];

    }
```



```
cout << "\nThe numbers you entered are:\n";

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

    cout << numbers[i] << " ";

}

return 0;

}
```

### **Output:**

The screenshot shows a C++ program in a code editor and its execution output. The code defines an array of 10 integers, prompts the user to enter 10 integers, and then prints them. The output shows the user entering numbers 2, 5, 6, 5 for prompts 7 through 10, followed by the program printing all 10 numbers: 6 5 5 5 3 23 2 5 6 5. The program finishes with exit code 0.

```
main.cpp
1  #include <iostream>
2
3  using namespace std;
4
5  int main() {
6      int numbers[10];
7
8      cout << "Enter 10 integers, one at a time:\n";
9      for (int i = 0; i < 10; ++i) {
10         cout << "Enter number " << i + 1 << ": ";
11         cin >> numbers[i];
12     }
13
14     cout << "\nThe numbers you entered are:\n";
15     for (int i = 0; i < 10; ++i) {
16         cout << numbers[i] << " ";
17     }
18
19     return 0;
20 }
21
```

input

```
Enter number 7: 2
Enter number 8: 5
Enter number 9: 6
Enter number 10: 5

The numbers you entered are:
6 5 5 5 3 23 2 5 6 5

...Program finished with exit code 0
```

**TASK 2:** Write a program to find the sum and product of all elements of an array with 5 integer elements.



**Input:**

```
#include <iostream>

using namespace std;

int main() {

    const int size = 5;

    int diamond[size][size];

    for (int i = 0; i < size; ++i) {

        for (int j = 0; j < size; ++j) {

            diamond[i][j] = 0;

        }

    }

    for (int i = 0; i < size / 2 + 1; ++i) {

        diamond[i][size / 2 - i] = 1;

        diamond[i][size / 2 + i] = 1;

    }

    for (int i = size / 2 + 1; i < size; ++i) {

        diamond[i][i - size / 2] = 1;

        diamond[i][size - (i - size / 2) - 1] = 1;

    }

    for (int i = 0; i < size; ++i) {

        for (int j = 0; j < size; ++j) {

            if (diamond[i][j] == 1)

                cout << "* ";

        }

    }

}
```



```
else

    cout << " ";

}

cout << endl;

}

return 0;

}
```

### **Output:**


```
6   int numbers[5];
7
8   cout << "Enter 5 integers, one at a time:\n";
9   for (int i = 0; i < 5; ++i) {
10      cout << "Enter number " << i + 1 << ": ";
11      cin >> numbers[i];
12   }
13
14   int sum = 0;
15   int product = 1;
16
17   // Calculate the sum and product of the elements
18   for (int i = 0; i < 5; ++i) {
19      sum += numbers[i];
20      product *= numbers[i];
21   }
22
23   cout << "\nThe sum of the numbers is: " << sum << endl;
24   cout << "The product of the numbers is: " << product << endl;
25
```

input

```
Enter 5 integers, one at a time:
Enter number 1: 4
Enter number 2: 3
Enter number 3: 2
Enter number 4: 7
Enter number 5: 9

The sum of the numbers is: 25
The product of the numbers is: 1512

...Program finished with exit code 0
Press ENTER to exit console.
```





**TASK 3:** Print diamond pattern using a single array.

**Input:**

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    const int size = 5;
```

```
    int diamond[size][size];
```

```
    for (int i = 0; i < size; ++i) {
```

```
        for (int j = 0; j < size; ++j) {
```

```
            diamond[i][j] = 0;
```

```
        }
```

```
    }
```

```
    for (int i = 0; i < size / 2 + 1; ++i) {
```

```
        for (int j = size / 2 - i; j <= size / 2 + i; ++j) {
```

```
            diamond[i][j] = 1;
```

```
        }
```

```
    }
```



```
for (int i = size / 2 + 1; i < size; ++i) {  
    for (int j = i - size / 2; j < size - (i - size / 2); ++j) {  
        diamond[i][j] = 1;  
    }  
}
```

```
for (int i = 0; i < size; ++i) {  
    for (int j = 0; j < size; ++j) {  
        cout << (diamond[i][j] == 1 ? "*" : " ");  
    }  
    cout << endl;  
}
```

```
return 0;  
}
```

**Output:**

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Department of Mechanical Engineering, DME



```
6  const int size = 5;
7  int diamond[size][size];
8
9  for (int i = 0; i < size; ++i) {
10     for (int j = 0; j < size; ++j) {
11         diamond[i][j] = 0;
12     }
13 }
14
15 for (int i = 0; i < size / 2 + 1; ++i) {
16     for (int j = size / 2 - i; j <= size / 2 + i; ++j) {
17         diamond[i][j] = 1;
18     }
19 }
20
21 for (int i = size / 2 + 1; i < size; ++i) {
22     for (int j = i - size / 2; j < size - (i - size / 2); ++j) {
23         diamond[i][j] = 1;
24     }
25 }
26
27 for (int i = 0; i < size; ++i) {
28     for (int j = 0; j < size; ++j) {
29         cout << (diamond[i][j] == 1 ? "*" : " ");
30     }
31     cout << endl;
32 }
```

input

```
*
* *
* * *
* * * *
* * * * *
```

The BAN logo is located in the bottom right corner of the code editor window. It consists of a red circle with a white dot inside, followed by the word "BAN" in a bold, sans-serif font.