

3. Ordinary variable and array variable
4. String a[5] and String a[]
5. Sorting and Searching
6. Linear search and Binary search
7. Sequential sort and Bubble sort
8. length and length()

[ICSE 2007 & 2011]

[ICSE 2010]

III. Give the output of the following:

1.

```
int m[ ] = {2,4,6,8};
System.out.println(m[1] + ' ' + m[2]);
```
2.

```
int a[ ] = {2,4,6,8,10};
a[0]=23;
a[3]=a[1];
int c= a[0]+a[1];
System.out.println("Sum = "+c);
```
3.

```
int a[ ]=new int [5];
a[0]=4; a[1]=8; a[2]=7; a[3]=12; a[4]=3;
System.out.println(a[2+1]);
```
4.

```
int a[4]={2,4,6,8};
for(i=0;i<=1;i++)
{
s=a[i]+a[3-i];
System.out.println(s);
}
```

IV. Java Programming:

1. Write a program to store 10 different numbers in a Single Dimensional Array (SDA).
Sample Input:

n[0]	n[1]	n[2]	n[3]	n[4]	n[5]	n[6]	n[7]	n[8]	n[9]
22	34	54	61	21	30	81	45	39	78

Sample Output:

Now, perform the following tasks:

- i. to display all the numbers in a reversed order

n[0]	n[1]	n[2]	n[3]	n[4]	n[5]	n[6]	n[7]	n[8]	n[9]
78	39	45	81	30	21	61	54	34	22

- ii. to display the sum and average of all the numbers

2. Write a program in Java to store 10 different country names and their capitals in two different S.D.As. Display the names along with their capitals in the given format.

Country Name	Capital
x x x x x	x x x
x x x x x	x x x

3. Write a program in Java to store 20 temperatures in °F in a S.D.A and display all the temperatures after converting them into °C. [Hint: $\frac{C}{5} = \frac{F - 32}{9}$]
4. Write a program in Java to store the runs scored by 11 Indian Cricket Players in an innings along with their names. Now display the name of the cricketer who has made the highest score in that innings along with the runs.

5. Write a program in Java to store 20 numbers (including even and odd numbers) in a S.D.A and display the sum of all even numbers and all odd numbers separately stored in the cell.
6. Write a program in Java to store 20 numbers in a S.D.A and display only those numbers which are prime.
7. Write a program in Java to store 20 different names in a S.D.A. Now enter a name and search whether the name is present or not using the Linear search technique. If the name is present then display the message "Search successful" otherwise display "Search unsuccessful".
8. Write a program in Java to store 20 different names and telephone numbers of your friends in two different S.D.As. Now arrange all the names in alphabetical order and display all the names along with their respective telephone numbers.
9. A teacher wants to keep the names of students and their total marks obtained in the final examination of her class having 40 students. Write a program in Java to store all the names and the total marks in two different S.D.As and display all the names of the students according to the rank obtained in the final examination, keeping the first rank at the top and so on.

10. The marks obtained by 50 students in a subject are tabulated as follows:-

Name	Marks
.....
.....
.....

Write a program to input the names and marks of the students in the subject.

Calculate and display:

- (a) The subject average marks (subject average marks = subject total/50).
- (b) The highest marks in the subject and the name of the student. (The maximum marks in the subject are 100) [ICSE 2006]

11. Write a program to input twenty names in an array. Arrange these names in descending order of alphabets, using the bubble sort technique. [ICSE 2015]

Sample Input:

Rohit, Devesh, Indrani, Shivangi, Himanshu, Rishi, Piyush, Deepak, Abhishek, Kunal

Sample Output:

Abhishek, Deepak, Devesh, Himanshu, Indrani, Kunal, Piyush, Rishi, Rohit, Shivangi

12. Write a program in Java using arrays:

- (a) To store the Roll No., Name and marks in six subjects for 100 students.
- (b) Calculate the percentage of marks obtained by each candidate.
The maximum marks in each subject are 100.

- (c) Calculate the Grade as per the given criteria:

Percentage Marks	Grade
From 80 to 100	A
From 60 to 79	B
From 40 to 59	C
Less than 40	D

[ICSE 2002]

13. Write a program in Java to store 10 words/names in a Single Dimensional Array. Display only those words/names which begin with the letter 'a' or 'A' and also end with the letter 'a' or 'A'.

Sample Input : Akash, Amrita, Anita, Chandana,

Sample Output : Amrita
Anita

.....
.....

14. Write a program in Java to store 10 city names in a Single Dimensional Array. Display only those words/names which begin with a consonant but end with a vowel.
- Sample Input** : Kolkata, Delhi, Bengaluru, Jamshedpur, Bokaro,
- Sample Output** : Kolkata
Delhi
Bengaluru
Bokaro
.....
.....
15. Write a program in Java to store 10 words/names in a Single Dimensional Array. Display only those words/names which begin with a vowel and also end with a vowel.
- Sample Input** : Eshita, Monalisha, Daniel, India,
- Sample Output** : Eshita
India
.....
.....
16. Write a program in Java to store 5 words in a Single Dimensional Array and frame a new word by taking out the first character of each word. Arrange the letters of the new word in ascending order and display the resultant word.
- Sample Input** : Computer, History, Physics, Biology, English
- New word** : CHPBE
- Sample Output** : BCEHP
17. Write a program in Java to store 10 words in a Single Dimensional Array. Display only those words which are Palindromes.
- Sample Input** : MADAM, TEACHER, SCHOOL, ABBA,
- Sample Output** : MADAM
ABBA
.....
.....
18. Write a program to accept a list of 20 integers. Sort the first 10 numbers in ascending order by using 'Selection Sort' technique and next the 10 numbers in descending order by using 'Bubble Sort' technique. Finally, print the complete list of integers.
19. The class teacher wants to store the marks obtained in English, Maths and Science of her class having 40 students. Write a program to input marks in Eng, Science and Maths by using three single dimensional arrays. Calculate and print the following information:
- Average marks secured by each student.
 - Class average in each subject.
- [Hint: Class average is the average marks obtained by 40 students in a particular subject.]
20. Write a program in Java to accept 20 numbers in a single dimensional array arr[20]. Transfer and store all the even numbers in an array even[] and all the odd numbers in another array odd[]. Finally, print the elements of both the arrays.
21. Write a program to store 20 numbers in a Single Dimensional Array (SDA). Now, display only those numbers having a complete square root.

Sample Input:

n[0]	n[1]	n[2]	n[3]	n[4]	n[5]	n[6]	n[7]	n[8]	n[9]
------	------	------	------	------	------	------	------	------	------

Roll No.	Subject A	Subject B	Subject C
.....
.....
.....

Write a program to read the data, calculate and display the following:

- Average marks obtained by each student.
 - Print the roll number and the average marks of the students whose average is above 80.
 - Print the roll number and the average marks of the students whose average is below 80.
23. Write a program to store 6 elements in an array P and 4 elements in an array Q. Now, produce a third array R, containing all the elements of array P and Q. Display the resultant array.

[ICSE 2009]

[ICSE 2010]

Input	Input	Output
P[]	Q[]	R[]
4	19	4
6	23	6
1	7	1
2	8	2
3		3
10		10
		19
		23
		7
		8

- Write a program to accept the names of 10 cities in a single dimensional string array and their STD (Subscribers Trunk Dialling) codes in another single dimension integer array. Search for the name of a city input by the user in the list. If found, display "Search Successful" and print the name of the city along with its STD code, or else display the message "Search unsuccessful, no such city in the list". [ICSE 2012]
- Write a program to accept the year of graduation from school as an integer value from the user. Using the binary search technique on the sorted array of integers given below, output the message "Record exists" if the value input is located in the array. If not, output the message "Record does not exist".
[1982, 1987, 1993, 1996, 1999, 2003, 2006, 2007, 2009, 2010] [ICSE 2014]
- Write a program to input and store roll numbers, names and marks in 3 subjects of n number of students in five single dimensional arrays and display the remark based on average marks as given below: [ICSE 2015]

Average Marks	Remark
85 - 100	Excellent
75 - 84	Distinction
60 - 74	First Class
40 - 59	Pass
Less than 40	Poor

27. A double dimensional array is defined as:
`int m[][]={{12,10,12,23},{30,11,32,71},{17,12,14,15},{41,33,40,51}};`
 Write a program in Java to find the sum of all even numbers and product of all odd numbers of the elements of the D.D.A.
28. A Departmental Shop has 5 stores and 6 departments. The monthly sale of the department is kept in a D.D.A as `int m[5][6]`. The Manager of the shop wants to know the total monthly sale of each store and each department at any time. Write a program to perform the given task.
[Hint: Number of stores as rows and Number of departments as columns.]
29. A Metropolitan Hotel has 5 floors and 10 rooms in each floor. The names of the visitors are entered in a D.D.A as `[5][10]`. The Hotel Manager wants to know from the "Enquiry" about the position of a visitor (i.e. floor no. and room no.) as soon as he enters the name of the visitor. Write a program in Java to perform the above task.
30. A Class Teacher wants to keep the records of 40 students of her class along with their names and marks obtained in English, Hindi, Maths, Science and Computer Science in a 40×5 D.D.A. When the teacher enters the name of a student as an input, the program must display the name, marks obtained in the 5 subjects and the total. Write a program in Java to perform the task.
31. Using a Java program, create a 3×3 matrix and store the first nine natural numbers in it row-wise. [ICSE 2002]

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

Now write a program to print the following output:

- Sum of the numbers in each row
 - Sum of the numbers in each column
 - Sum of the numbers in the left diagonal
 - Sum of the numbers in the right diagonal
32. If arrays M and M + N are as shown below, write a program in Java to find the array N. [ICSE 2004]

$$M = \begin{bmatrix} -1 & 0 & 2 \\ -3 & -1 & 6 \\ 4 & 3 & -1 \end{bmatrix} \text{ and } M + N = \begin{bmatrix} -6 & 9 & 4 \\ 4 & 5 & 0 \\ 1 & -2 & -3 \end{bmatrix}$$

33. Write a program to create a Double Dimensional Array (DDA) as:
`char ch[][]=new ch[3][3];`
 The program stores nine different letters in the double dimensional array. Display the letters which are vowels.

$$\begin{bmatrix} p & e & r \\ w & d & a \\ u & m & k \end{bmatrix}$$

Sample Output: e, a, u

34. Write a program to create a Double Dimensional Array (DDA) as:
`char ch[][]=new ch[3][3];`
 The program stores nine different letters in the double dimensional array. Display the letters of the left diagonal.

$$\begin{bmatrix} s & p & k \\ g & u & f \\ b & c & n \end{bmatrix}$$

Sample Output: s, u, n