

Class 10

Chapter – 15

Arrays

A. TICK (✓) THE CORRECT ANSWER

✓ A. Tick (✓) the correct answer

1. Which of the following operation can be done on arrays?

- a. Insertion
- b. Deletion
- c. Sorting
- d. All of these

✓ Answer: d. All of these

💡 Explanation:

Arrays support insertion, deletion, and sorting — all are valid operations.

2. The "int ar[][] = new int[3][4];" is used to create an array of size _____

- a. 3×3
- b. 3×4
- c. 4×3
- d. 4×4

✓ Answer: b. 3×4

💡 Explanation:

3 rows and 4 columns.

3. What is the value of a after executing the following code?

```
int arr[] = {1, 2, 3, 4, 5};  
a = arr[1] + arr[4] - arr[2];
```

- a. 5
- b. 2
- c. 1
- d. 4

✓ Answer: d. 4

💡 Explanation:

arr[1]=2, arr[4]=5, arr[2]=3

☞ $2 + 5 - 3 = 4$

4. Which of the following is the last subscript of N element array?

- a. N
- b. N+1
- c. N-1
- d. None of these

✓ **Answer: c. N-1**

💡 **Explanation:**

Array index starts from 0, so last index = N-1

5. If `int arr[]={1,3,5,7,5};` then what is the value of a, if `a=arr.length + arr[4]`?

- a. 12
- b. 5
- c. 10
- d. 0

✓ **Answer: c. 10**

💡 **Explanation:**

Length = 5

`arr[4] = 5`

☞ $5 + 5 = 10$

6. How do you initialize an array in Java?

- a. `int[] myArray = new int();`
- b. `int[] myArray = new int[5];`
- c. `int[] myArray = {1,2,3,4,5};`
- d. All of these

✓ **Answer: c. `int[] myArray = {1,2,3,4,5};`**

💡 **Explanation:**

- (a) ✗ wrong syntax
- (b) ✓ declaration but not full initialization
- (c) ✓ correct initialization

7. What happens if you try to access an index beyond the array bounds in Java?

- a. Compile-time error
- b. Runtime error
- c. Returns default value
- d. Returns null

✓ **Answer: b. Runtime error**

💡 **Explanation:**

Java throws **ArrayIndexOutOfBoundsException**

8. Which method is used to find the length of an array in Java?

- a. size()
- b. length()
- c. getSize()
- d. getLength()

✔ **Answer: b. length()**

💡 **Explanation:**

For arrays → array.length

9. What is a 2D array in Java?

- a. Different data types
- b. Two elements
- c. Array of arrays
- d. Only integers

✔ **Answer: c. Array of arrays**

💡 **Explanation:**

2D array = array inside another array

10. What is the syntax to initialize a 2D array of size 3×3?

- a. `int[][] myArray = new int();`
- b. `int[][] myArray = new int[3,3];`
- c. `int[][] myArray = {{1,2},{3,4}};`
- d. `int[][] myArray = new int[3][3];`

✔ **Answer: d. `int[][] myArray = new int[3][3];`**

✔ B. Answer the following questions (Programs)

1. Multiples of 6 and product of negative numbers

```
int arr[] = new int[10];  
int sum = 0, product = 1;
```

```
for(int i=0;i<10;i++){  
    arr[i] = sc.nextInt();  
  
    if(arr[i] % 6 == 0)  
        sum += arr[i];  
  
    if(arr[i] < 0)  
        product *= arr[i];  
}
```

```
System.out.println("Sum of multiples of 6 = " + sum);  
System.out.println("Product of negative numbers = " + product);
```

2. Palindromic numbers in array

```
for(int i=0;i<25;i++){
    int num = arr[i], rev=0, temp=num;

    while(num>0){
        rev = rev*10 + num%10;
        num/=10;
    }

    if(temp == rev)
        System.out.println(temp);
}
```

3. Sum of even numbers at odd positions

```
int sum=0;
for(int i=1;i<10;i+=2){
    if(arr[i]%2==0)
        sum+=arr[i];
}
System.out.println(sum);
```

4. Sum of two arrays into third array

```
for(int i=0;i<5;i++){
    C[i] = A[i] + B[i];
}
```

5. Delete element from array

```
int pos = sc.nextInt();

for(int i=pos;i<9;i++){
    arr[i] = arr[i+1];
}
```

6. Item name and price total

```
String item[] = new String[5];
int price[] = new int[5];
int total=0;

for(int i=0;i<5;i++){
    item[i]=sc.next();
    price[i]=sc.nextInt();
    total+=price[i];
}

System.out.println("Total Amount = "+total);
```

7. Insert element at position

```
for(int i=9;i>pos;i--){
    arr[i]=arr[i-1];
}
arr[pos]=value;
```

8. Selection Sort

```
for(int i=0;i<n-1;i++){
    int min=i;
    for(int j=i+1;j<n;j++){
        if(arr[j]<arr[min])
            min=j;
    }
}
```

```
}  
int temp=arr[i];  
arr[i]=arr[min];  
arr[min]=temp;  
}
```

9. Separate odd and even arrays

```
if(arr[i]%2==0)  
    even[j++]=arr[i];  
else  
    odd[k++]=arr[i];
```

10. Sum of Niven numbers

```
int sum=0;  
  
for(int i=0;i<20;i++){  
    int n=arr[i], s=0, temp=n;  
  
    while(n>0){  
        s+=n%10;  
        n/=10;  
    }  
  
    if(temp % s == 0)  
        sum+=temp;  
}
```

11. Student marks and merit

```
double avg = (m1+m2)/2;  
  
if(avg > 80)  
    System.out.println(name);
```

12. Max and Min in array

```
int max=arr[0], min=arr[0];  
  
for(int i=1;i<25;i++){  
    if(arr[i]>max) max=arr[i];  
    if(arr[i]<min) min=arr[i];  
}
```

13. Reverse numbers

```
while(n>0){  
    rev = rev*10 + n%10;  
    n/=10;  
}
```

14. Common elements

```
if(A[i]==B[j])  
    System.out.println(A[i]);
```

15. Student average

```
avg = (A+B+C)/3;  
  
if(avg>80)  
    print;
```

```
if(avg<40)
    print;
```

16. Diagonal sum (3×3)

```
sum += arr[i][i];
```

17. Row sum and column product

```
rowSum += arr[i][j];
colProduct *= arr[i][j];
```

18. Sort each column

☞ Use nested loops column-wise sorting.

19. Symmetric matrix

```
if(arr[i][j] != arr[j][i])
    not symmetric;
```

20. Matrix diagonal sum ratio

```
sumA += A[i][i];
sumB += B[i][n-i-1];
```

```
result = sumA / sumB;
```

21. Even numbers row-wise

```
if(arr[i][j]%2==0)
    print;
```

22. Pascal Triangle

```
arr[i][j] = arr[i-1][j-1] + arr[i-1][j];
```

23. Largest number column-wise

```
if(arr[i][j] > max)
    max = arr[i][j];
```

✓ C. Assertion & Reasoning

1. Selection Sort

✓ **Answer: b. Both true but not correct explanation**

💡 Reason is wrong (it places at beginning, not middle)

2. Binary Search

✓ **Answer: a. Both true and correct explanation**
