



Array

Rawlabs Academy

What is **Array**?



- A data structure consisting of a collection of the **same data type**
- Have index start from **0 to N-1**
- Can be accessed randomly

Declaring Array

```
char[] rawlabs = new char[] {'r', 'a', 'w', 'l', 'a', 'b', 's'};
```

```
char[] rlabs = new char[7];
```

```
rlabs[0] = 'r';
```

```
rlabs[1] = 'a';
```

```
rlabs[2] = 'w';
```

```
rlabs[3] = 'l';
```

```
rlabs[4] = 'a';
```

```
rlabs[5] = 'b';
```

```
rlabs[6] = 's';
```

```
String[] days = new String[]{"Monday", "Tuesday",  
    "Wednesday", "Thursday", "Friday",  
    "Saturday", "Sunday"};
```

Example

Best Practice : Use plural words to define variables

```
public static void main(String[] args) {  
    Person[] persons = new Person[5];  
  
    persons[0] = new Person("John");  
    persons[1] = new Person("Doe");  
    persons[2] = new Person("Calvin");  
    persons[3] = new Person("Albert");  
    persons[4] = new Person("Maverick");  
}
```

Basic Array Usage

Note: The elements of array have index **0 to N-1**

```
public static void main(String[] args) {  
    String[] names = new String[100];  
    for (int i = 0; i < names.length; i++) {  
        System.out.println("Value: " + names[i] + " at index " + i);  
    }  
}
```

Multiple Dimensional Arrays

A multiple dimensional arrays are implemented as **arrays within arrays**.

```
public static void main(String[] args) {  
    // Element 3 x 3 from integer array  
    int[][] twoD = new int[3][3];  
  
    // Char array 2 x 3 x 4  
    char[][][] = new char[2][3][4]  
  
    // String array 2 row and 3 columns  
    String[][] cats = new String[][]{  
        {"Peter", "Brown"},  
        {"Parker", "White"},  
        {"Cony", "Black"}  
    };  
}
```

Cont...

How to print out *"I have a cat, his name is **Parker** and have **White** color"*?

```
public static void main(String[] args) {  
    String name = cats[0][1];  
    String color = cats[1][1];  
  
    System.out.println("I have a cat, his name is " + name +  
        " and have " + color + " color");  
}
```

Cont...

```
public static void main(String[] args) {  
    String[][] cats = new String[][]{  
        {"Peter", "Brown"},  
        {"Parker", "White"},  
        {"Cony", "Black"}  
    };  
  
    for (int row = 0; row < 3; row++) {  
        for (int col = 0; col < 2; col++) {  
            System.out.println(cats[row][col]);  
        }  
  
        System.out.println();  
    }  
}
```


Task 1 - Check **Prime Number**

Given an array `[2, 4, 8, 7, 9, 13, 11, 29, 18, 29, 34, 15, 17]`, create a function to check whether the numbers in the array are **prime** or not.

Expected Output:

- When prime number, print **x is Prime Number**.
- When not prime number, print **x is not Prime Number**.

Task 2 - Play with Asterisk

Write a program to print the **asterisk triangle** as shown below.

Input: 5

Output:

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

Task 3 - Multiply Table

Write program to print table of multiply based on user input as shown below.

Input : 6

Output :

| | | | | | |
|---|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 2 | 4 | 6 | 8 | 10 | 12 |
| 3 | 6 | 9 | 12 | 15 | 18 |
| 4 | 8 | 12 | 16 | 20 | 24 |
| 5 | 10 | 15 | 20 | 25 | 30 |
| 6 | 12 | 18 | 24 | 30 | 36 |

Task 4 - Searching (Bonus)

Given **Person** data

| NIK | Name |
|------|----------|
| 0001 | Calvin |
| 0002 | Joe |
| 0003 | Maverick |
| 0004 | Kirito |
| 0005 | Andrew |

Write program to search `Person` by `name` **OR** by `nik`.

Test Case

- Input : `Joe`, Output : `Found data [Joe 0002]`
- Input : `0004`, Output : `Found data at [Kirito 0004]`
- Input : `Any`, Output : `Data not found`