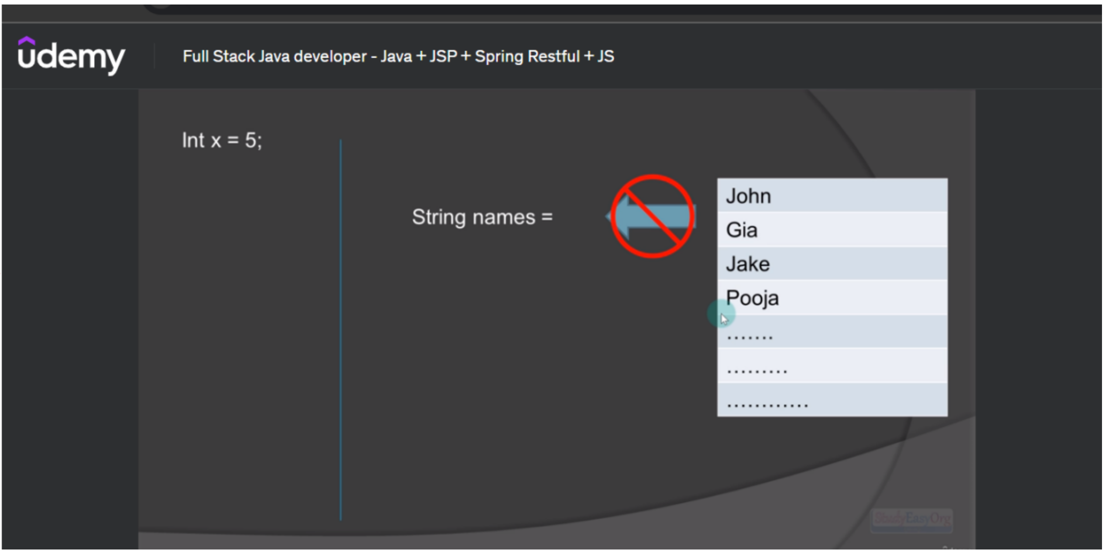
Arrays

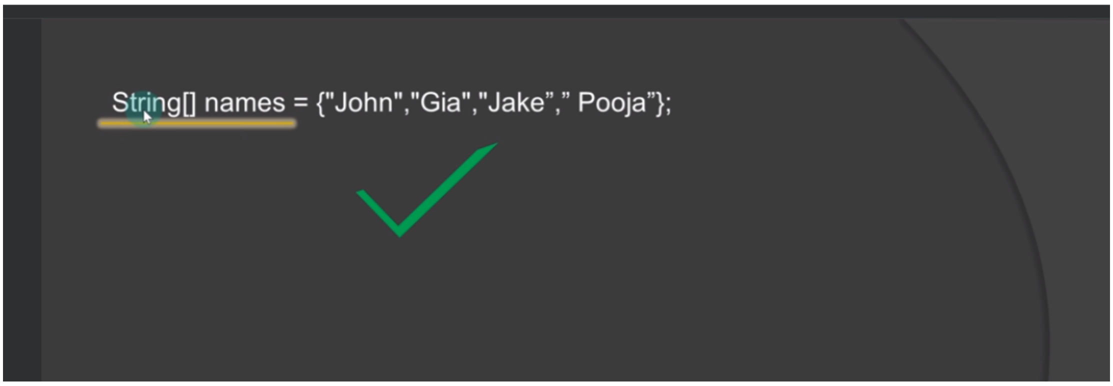


Udemy
Full Stack Java developer - Java + JSP + Spring Restful + JS

Int x = 5;

String names =

John
Gia
Jake
Pooja
....
....
....



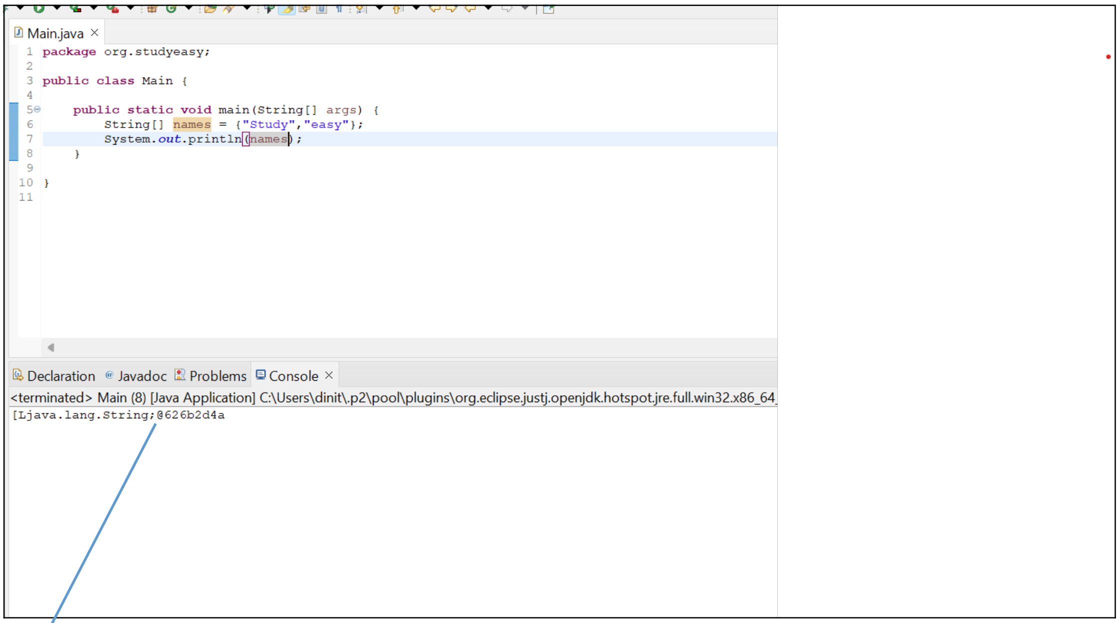
String[] names = {"John","Gia","Jake"," Pooja"};

- Points to Remember:-

- All the elements in the array should be of same data type.
- All the elements are stored in adjustment memory location for a quicker and convienient access.

- Intialization of Array:-

- Syntax:- <name of datatype>[] <name of variable> = {val1,val2...};
- Example:

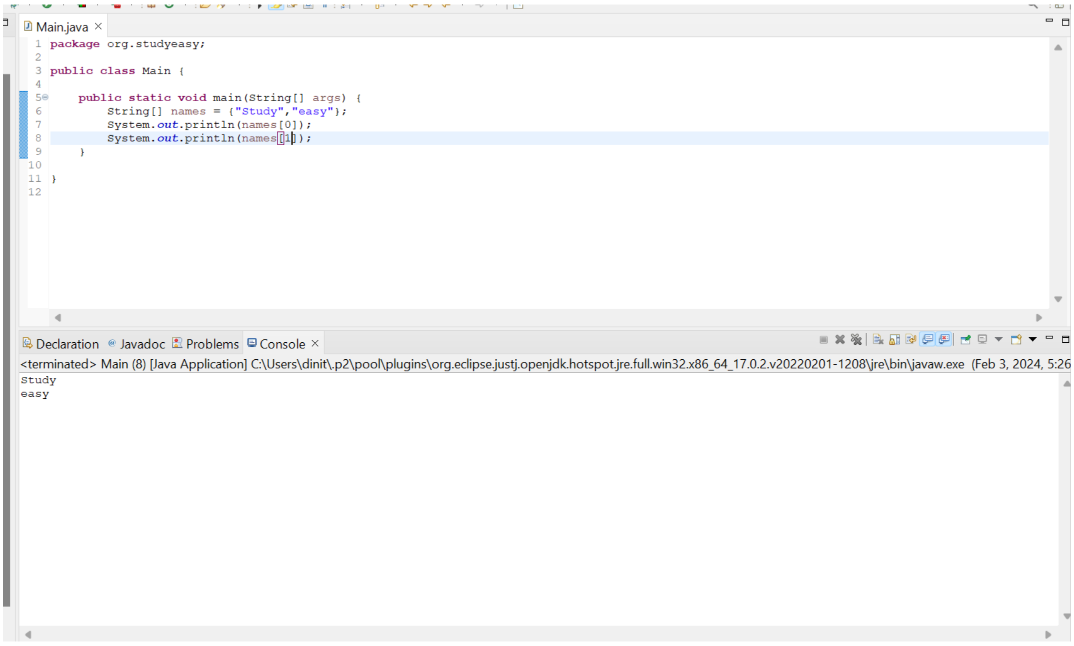


```java
package org.studyeasy;

public class Main {

    public static void main(String[] args) {
        String[] names = {"Study","easy"};
        System.out.println(names);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64
[Ljava.lang.String;@626b2d4a
```

Base Address of Array Element

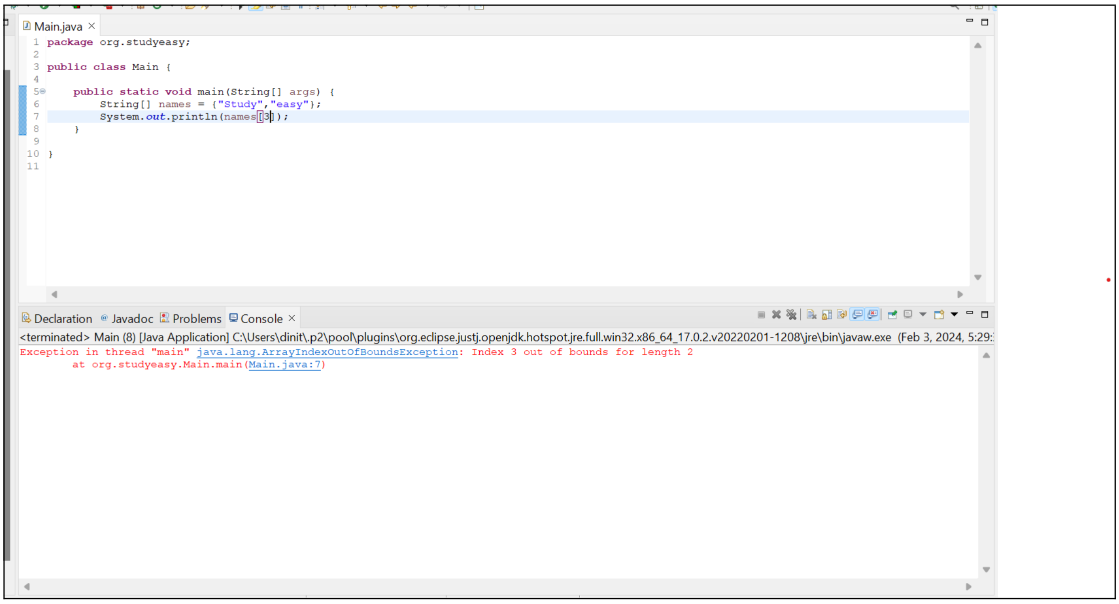
The indices always start from zero. If you want to access array element use indices([]).



```java
package org.studyeasy;

public class Main {

    public static void main(String[] args) {
        String[] names = {"Study","easy"};
        System.out.println(names[0]);
        System.out.println(names[1]);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe  (Feb 3, 2024, 5:26
Study
easy
```

If you are trying to access the element which is not present, then you get an exception which is unchecked exception - ArrayIndexOutOfBound Exception.

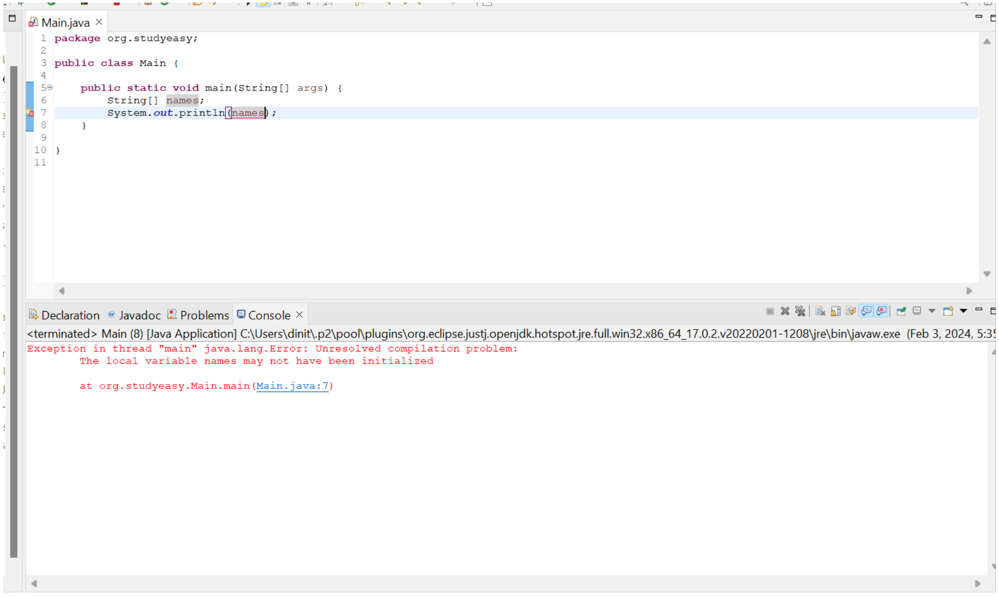


```java
package org.studyeasy;

public class Main {

    public static void main(String[] args) {
        String[] names = {"Study","easy"};
        System.out.println(names[3]);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe  (Feb 3, 2024, 5:29:
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: Index 3 out of bounds for length 2
	at org.studyeasy.Main.main(Main.java:7)
```

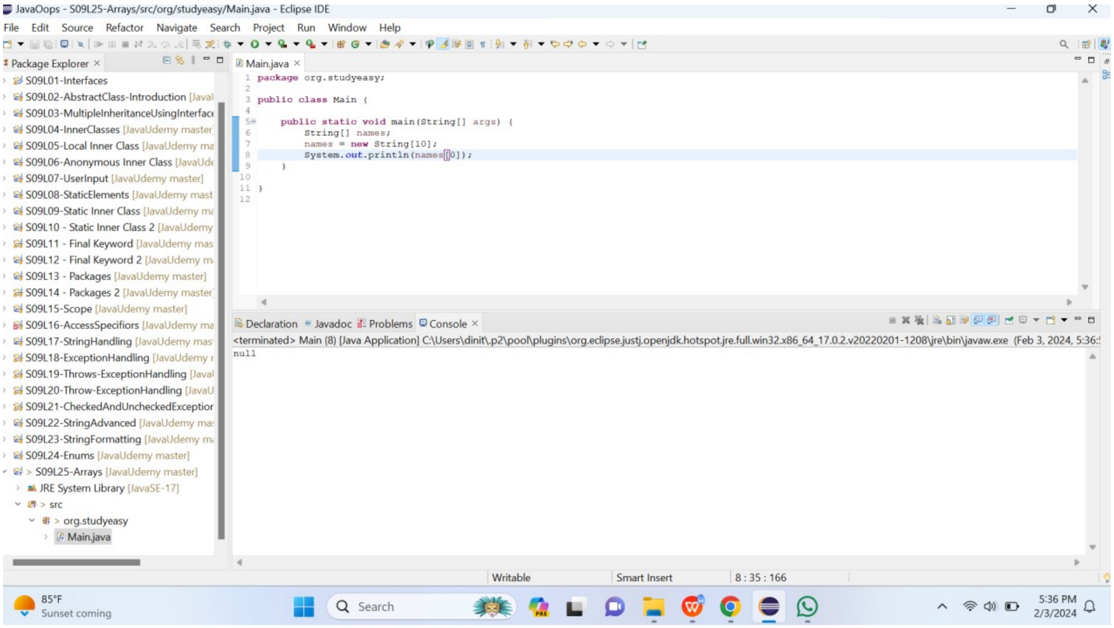
Without Intializing

What happens if we do not mention the length of the array? Then we get below error.



```java
package org.studyeasy;

public class Main {

    public static void main(String[] args) {
        String[] names;
        System.out.println(names);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe  (Feb 3, 2024, 5:35
Exception in thread "main" java.lang.Error: Unresolved compilation problem: 
	The local variable names may not have been initialized

	at org.studyeasy.Main.main(Main.java:7)
```

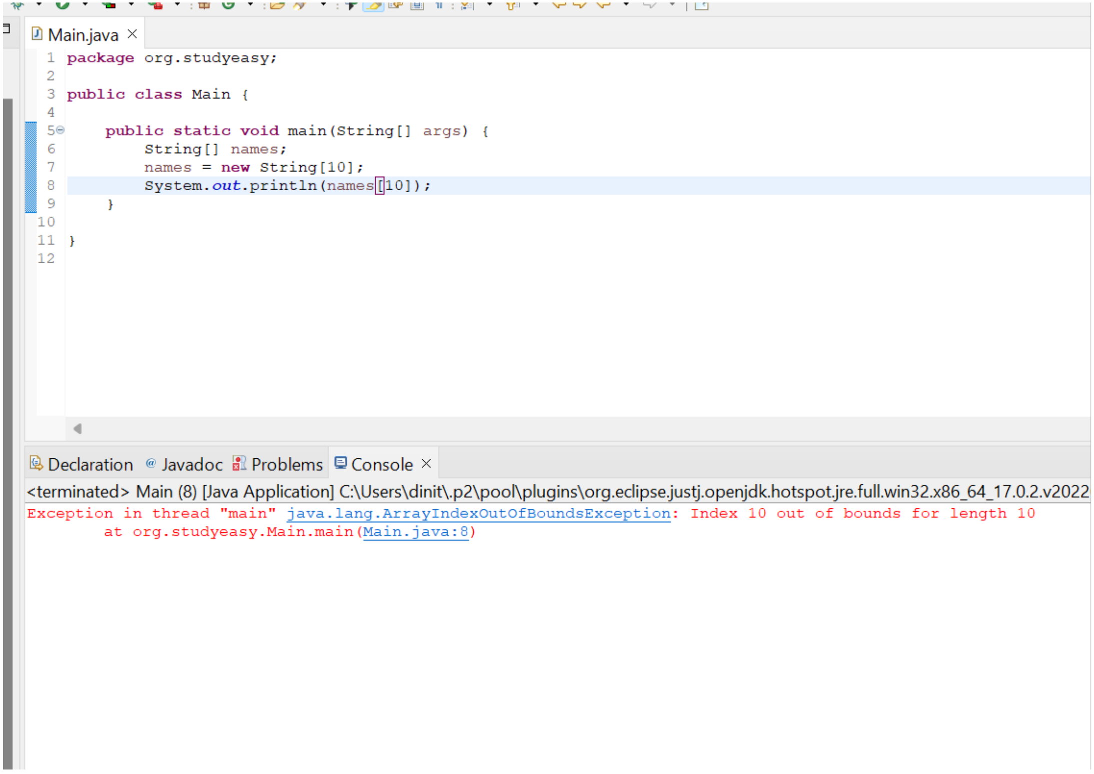


```java
package org.studyeasy;

public class Main {

    public static void main(String[] args) {
        String[] names;
        names = new String[10];
        System.out.println(names[0]);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe (Feb 3, 2024, 5:36:
null
```

If value not assigned then, Java will assign null to all values for the specified length.

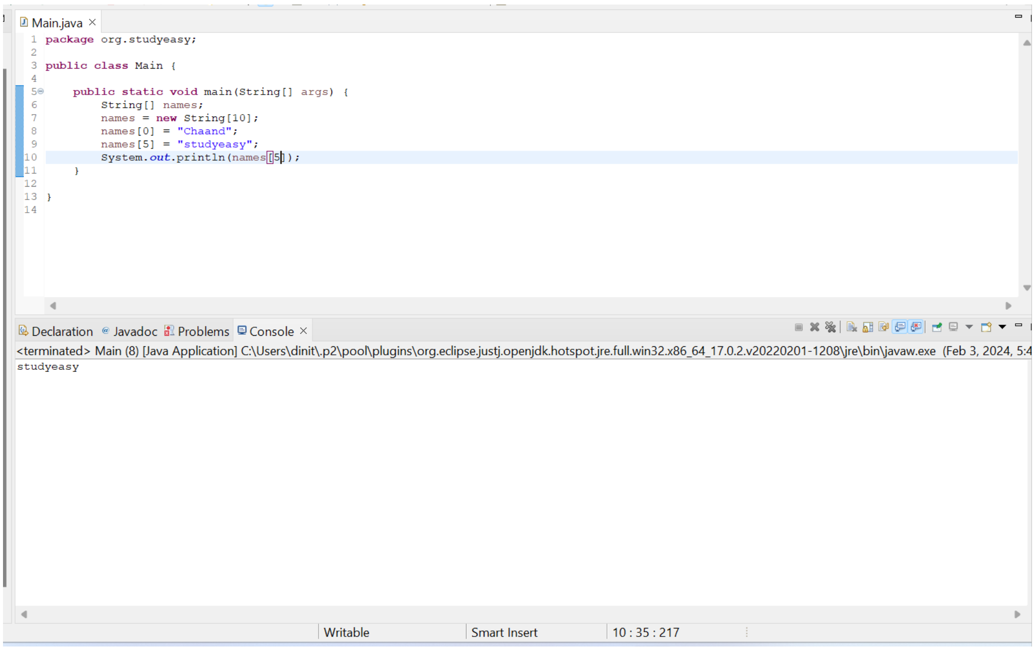
If we try to run the program where index is out of array, then we get the error stating that Index 10 out of bound.Below show is an example.(String -> default value -> null)



```java
package org.studyeasy;

public class Main {

    public static void main(String[] args) {
        String[] names;
        names = new String[10];
        System.out.println(names[10]);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v2022
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: Index 10 out of bounds for length 10
	at org.studyeasy.Main.main(Main.java:8)
```

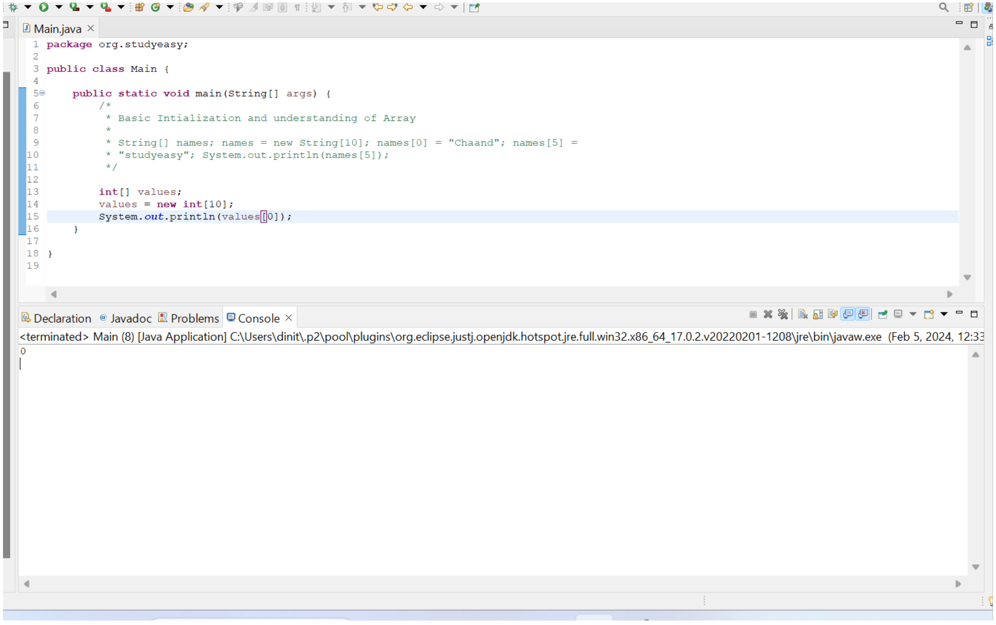
<u>Assigning the values to the array:-</u>



```java
package org.studyeasy;

public class Main {

    public static void main(String[] args) {
        String[] names;
        names = new String[10];
        names[0] = "Chaand";
        names[5] = "studyeasy";
        System.out.println(names[5]);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe  (Feb 3, 2024, 5:4
studyeasy
```

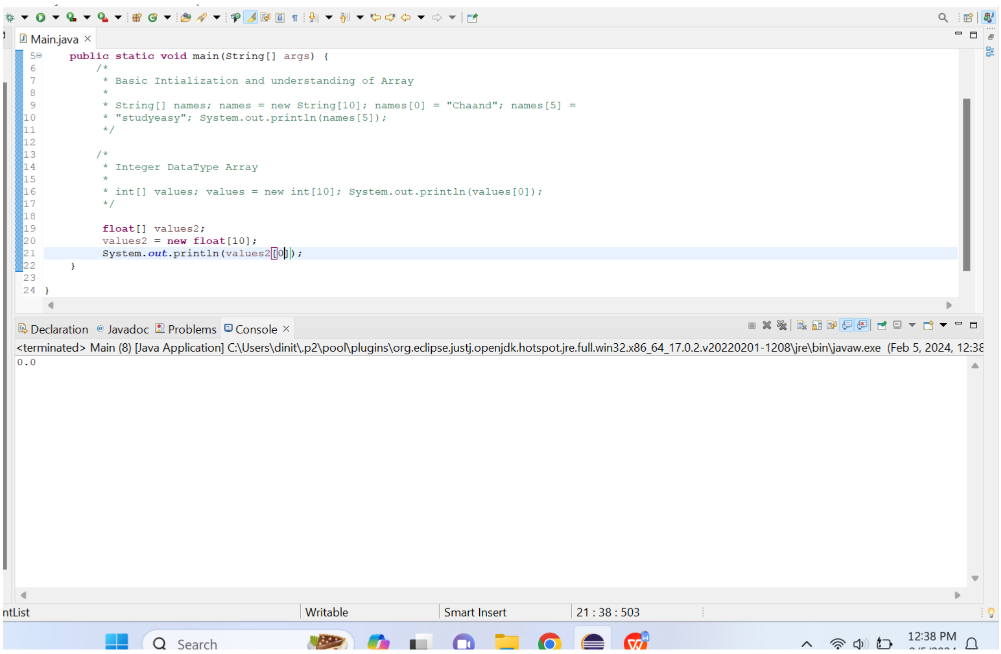
If we do not specify any value to the string array, then his what happens! (int Data Type -> default value -> 0)



```java
package org.studyeasy;

public class Main {

    public static void main(String[] args) {
        /*
         * Basic Intialization and understanding of Array
         *
         * String[] names; names = new String[10]; names[0] = "Chaand"; names[5] =
         * "studyeasy"; System.out.println(names[5]);
         */

        int[] values;
        values = new int[10];
        System.out.println(values[0]);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe  (Feb 5, 2024, 12:33
0
```

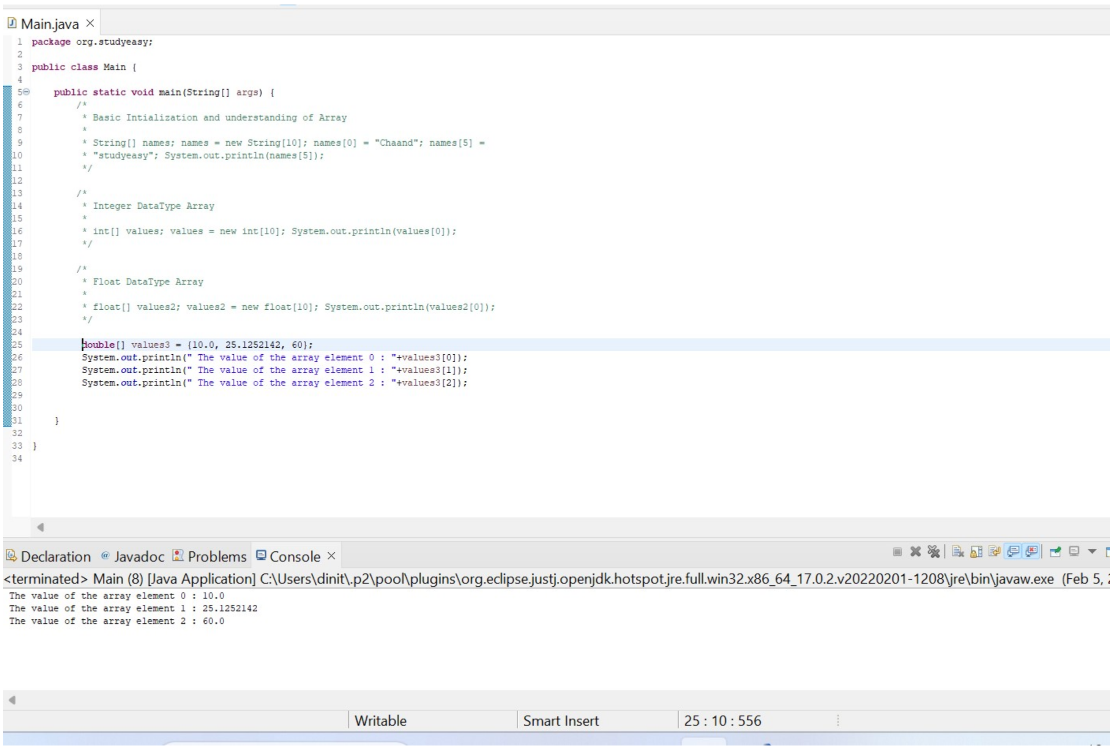
If we do not specify any value to the string array, then his what happens! (float Data Type -> default value -> 0.0)



```
    public static void main(String[] args) {
        /*
         * Basic Intialization and understanding of Array
         *
         * String[] names; names = new String[10]; names[0] = "Chaand"; names[5] =
         * "studyeasy"; System.out.println(names[5]);
         */

        /*
         * Integer DataType Array
         *
         * int[] values; values = new int[10]; System.out.println(values[0]);
         */

         float[] values2;
         values2 = new float[10];
         System.out.println(values2[0]);
    }

}
```

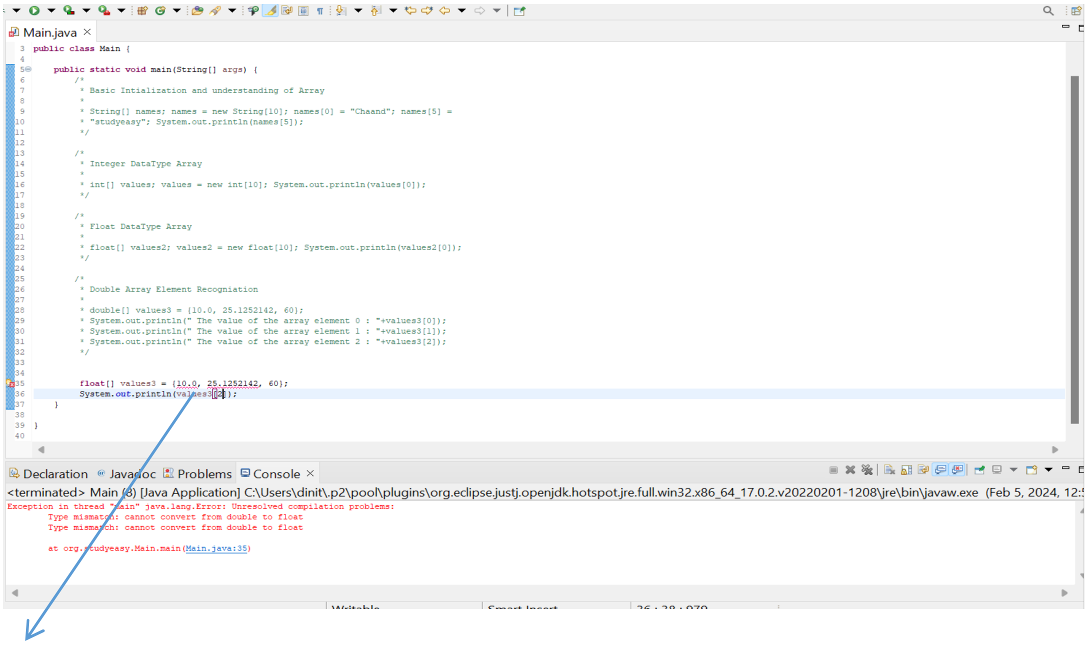
```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe  (Feb 5, 2024, 12:38
0.0
```

Assigning the values to the double type



```
package org.studyeasy;

public class Main {

    public static void main(String[] args) {
        /*
         * Basic Intialization and understanding of Array
         *
         * String[] names; names = new String[10]; names[0] = "Chaand"; names[5] =
         * "studyeasy"; System.out.println(names[5]);
         */

        /*
         * Integer DataType Array
         *
         * int[] values; values = new int[10]; System.out.println(values[0]);
         */

        /*
         * Float DataType Array
         *
         * float[] values2; values2 = new float[10]; System.out.println(values2[0]);
         */

         double[] values3 = {10.0, 25.1252142, 60};
         System.out.println(" The value of the array element 0 : "+values3[0]);
         System.out.println(" The value of the array element 1 : "+values3[1]);
         System.out.println(" The value of the array element 2 : "+values3[2]);


    }

}

```

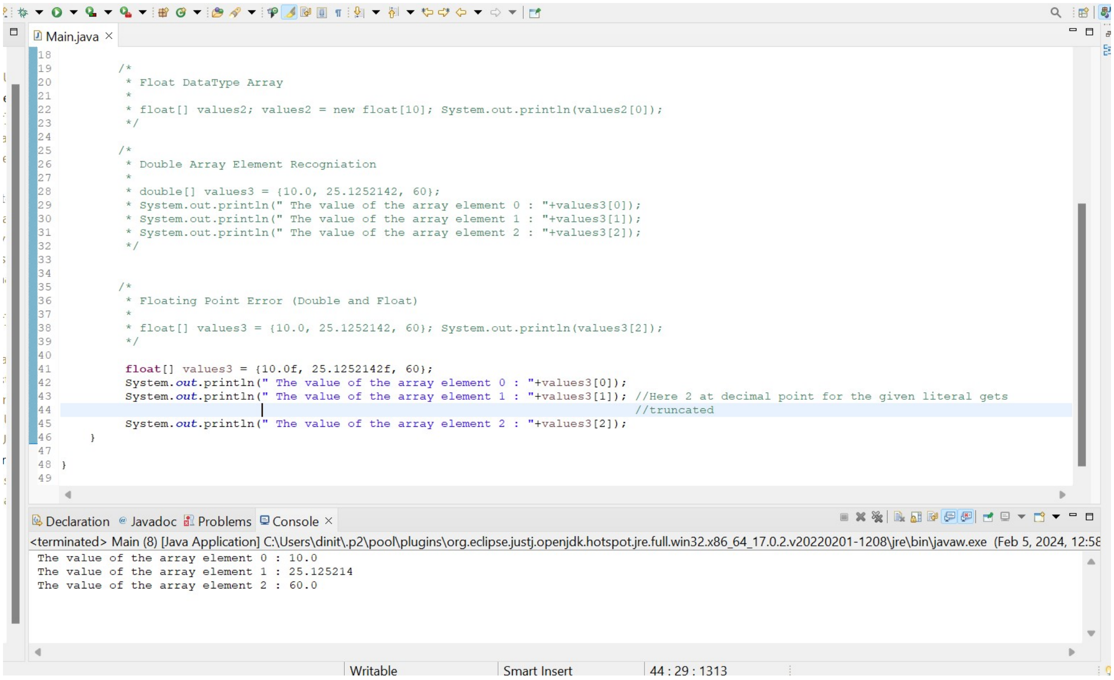
```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe  (Feb 5, 2
 The value of the array element 0 : 10.0
 The value of the array element 1 : 25.1252142
 The value of the array element 2 : 60.0
```



```
public class Main {

    public static void main(String[] args) {
        /*
         * Basic Intialization and understanding of Array
         *
         * String[] names; names = new String[10]; names[0] = "Chaand"; names[5] =
         * "studyeasy"; System.out.println(names[5]);
         */

        /*
         * Integer DataType Array
         *
         * int[] values; values = new int[10]; System.out.println(values[0]);
         */

        /*
         * Float DataType Array
         *
         * float[] values2; values2 = new float[10]; System.out.println(values2[0]);
         */

        /*
         * Double Array Element Recogniation
         *
         * double[] values3 = {10.0, 25.1252142, 60};
         * System.out.println(" The value of the array element 0 : "+values3[0]);
         * System.out.println(" The value of the array element 1 : "+values3[1]);
         * System.out.println(" The value of the array element 2 : "+values3[2]);
         */


        float[] values3 = {10.0, 25.1252142, 60};
        System.out.println(values3[2]);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe  (Feb 5, 2024, 12:
Exception in thread "main" java.lang.Error: Unresolved compilation problems:
	Type mismatch: cannot convert from double to float
	Type mismatch: cannot convert from double to float

	at org.studyeasy.Main.main(Main.java:35)
```

What's going on here? Why there is error? Its because if we create 10.0, it will be double value. As a result we should explictly specify the literal f to floating point number.Refer below screenshot.



```

        /*
         * Float DataType Array
         *
         * float[] values2; values2 = new float[10]; System.out.println(values2[0]);
         */

        /*
         * Double Array Element Recogniation
         *
         * double[] values3 = {10.0, 25.1252142, 60};
         * System.out.println(" The value of the array element 0 : "+values3[0]);
         * System.out.println(" The value of the array element 1 : "+values3[1]);
         * System.out.println(" The value of the array element 2 : "+values3[2]);
         */


        /*
         * Floating Point Error (Double and Float)
         *
         * float[] values3 = {10.0, 25.1252142, 60}; System.out.println(values3[2]);
         */

        float[] values3 = {10.0f, 25.1252142f, 60};
        System.out.println(" The value of the array element 0 : "+values3[0]);
        System.out.println(" The value of the array element 1 : "+values3[1]); //Here 2 at decimal point for the given literal gets
                                                                                //truncated
        System.out.println(" The value of the array element 2 : "+values3[2]);
    }

}
```

```
<terminated> Main (8) [Java Application] C:\Users\dinit\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe  (Feb 5, 2024, 12:58
 The value of the array element 0 : 10.0
 The value of the array element 1 : 25.125214
 The value of the array element 2 : 60.0
```