

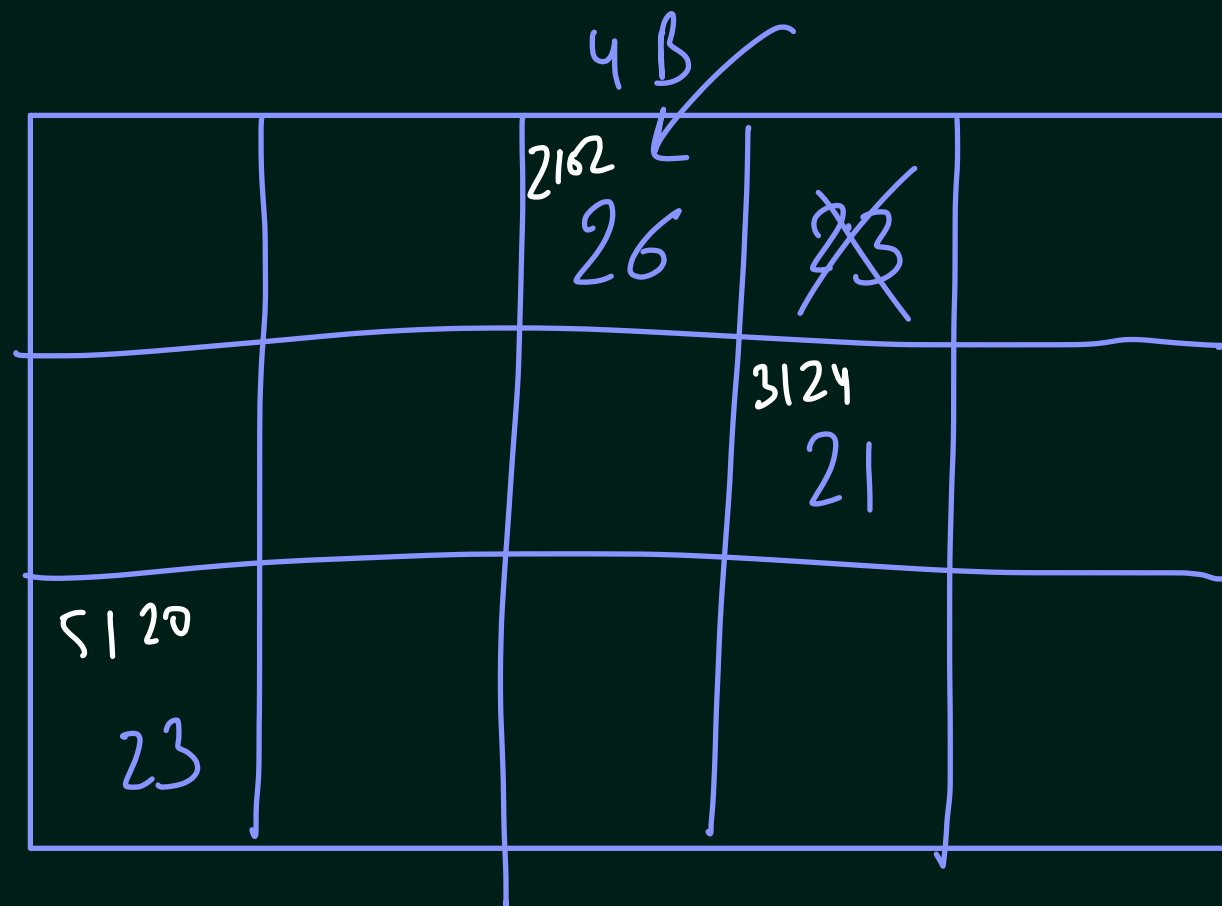
Arrays in Java

In This Lecture

1. How do the Arrays work? ✓
2. Creating and Declaring Arrays ✓
3. for-each loop ✓
4. Multi-dimensional Arrays ✓

How do the Arrays work?

Arrays are stored in contiguous memory [consecutive memory locations].

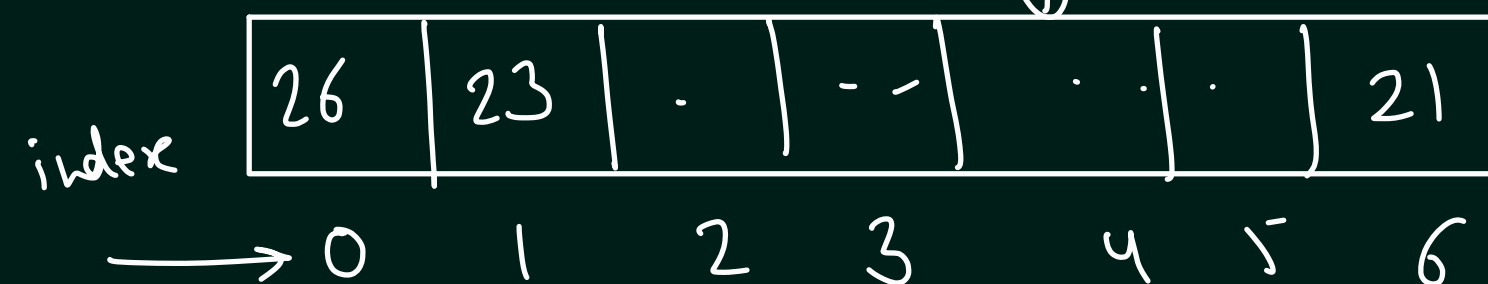


↓

```

→ int age1 = 26;
→ int age2 = 23;
  ⋮
  ⋮
  ⋮
int age10 = 21;
  
```

Arrays → Same Type data



length = 7

Creating an Array

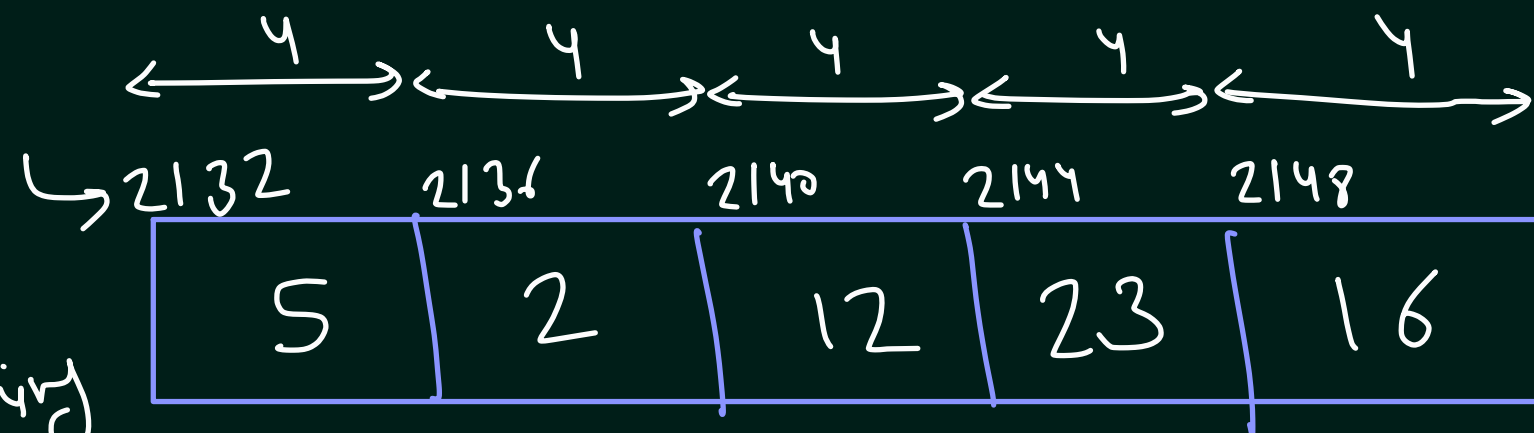
// both are valid declarations ✓

✓ `int intArray[];` //
or `int[] intArray;`

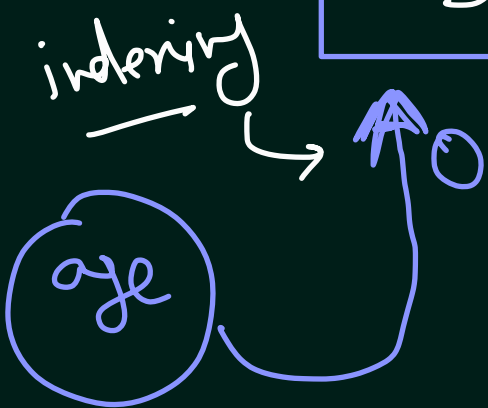
↳ `int age;` // Declaration
↳ `age = 23;` // Initialisation

↳ $\text{address of zero} + \text{index} \times \text{size}$

✓ `intArray = new int[20];` // allocating memory to array
↳ $2132 + 3 \times 4$
2144



length = 5

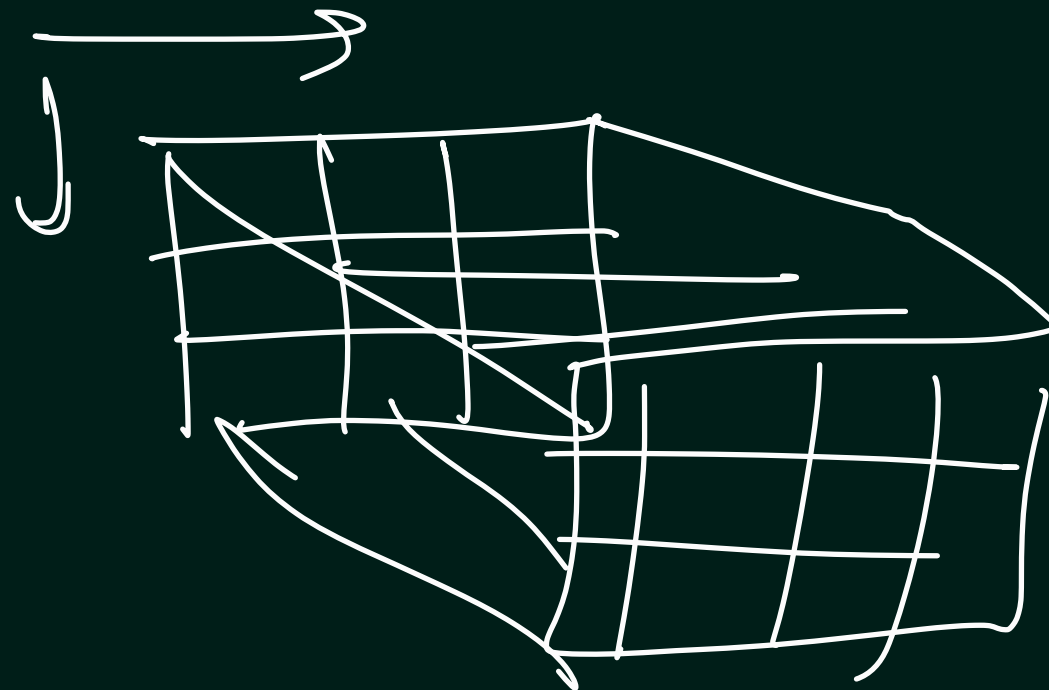
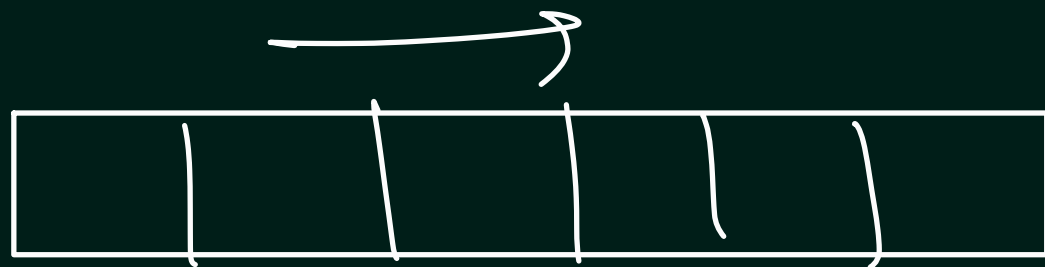


`age[3] = 23;`
↑

for-each Loop

↳ Arrays

```
for (String name : names) {  
    sout(name);  
}
```

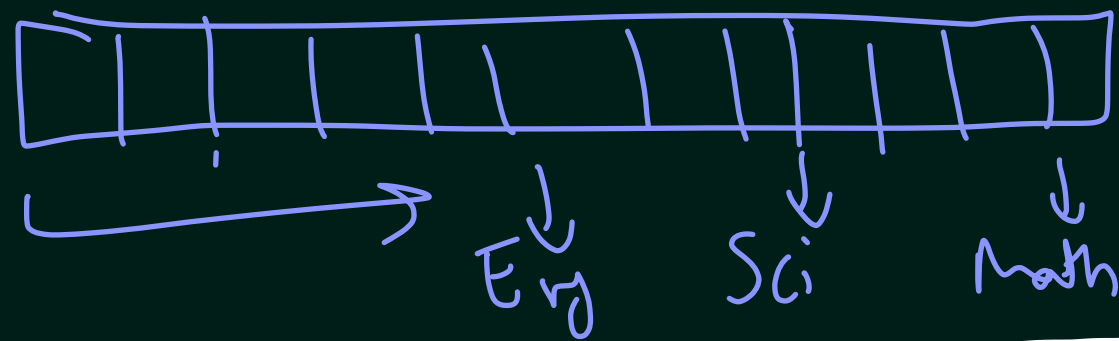


Multi-dimensional Array

2-D array / matrix

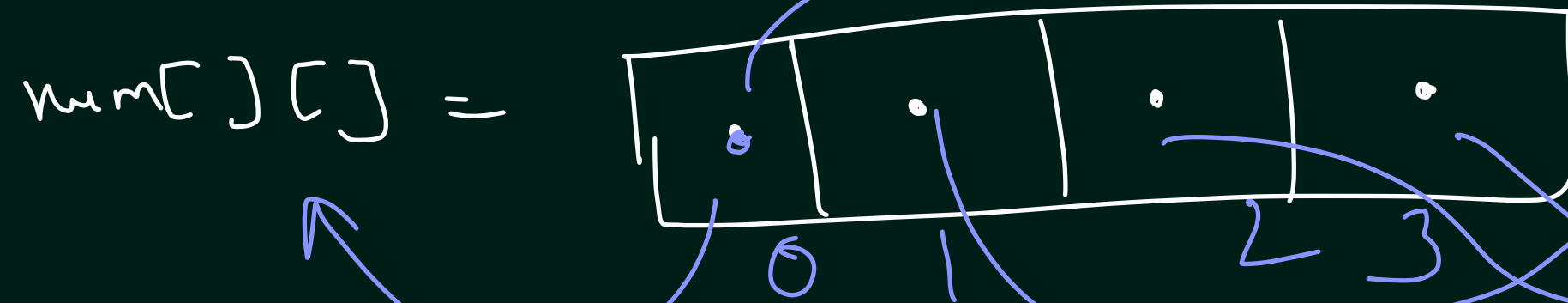
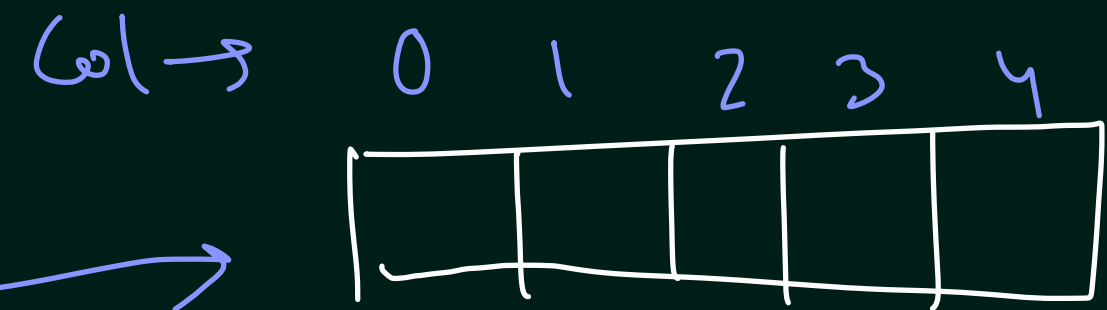
`int a[][] = new int[3][4]`

$$3 \times 4 = 12$$



→ 0 →	42	12	98
→ 1 →	98	14	22
→ 2 →			

	Column 1 0	Column 2 1	Column 3 2	Column 4 3
Row 1 0	a[0][0] ↑ ↑	a[0][1]	a[0][2]	a[0][3]
Row 2 1	a[1][0]	a[1][1]	a[1][2] ↓ ↓ x	a[1][3]
Row 3 2	a[2][0]	a[2][1]	a[2][2]	a[2][3]



row

