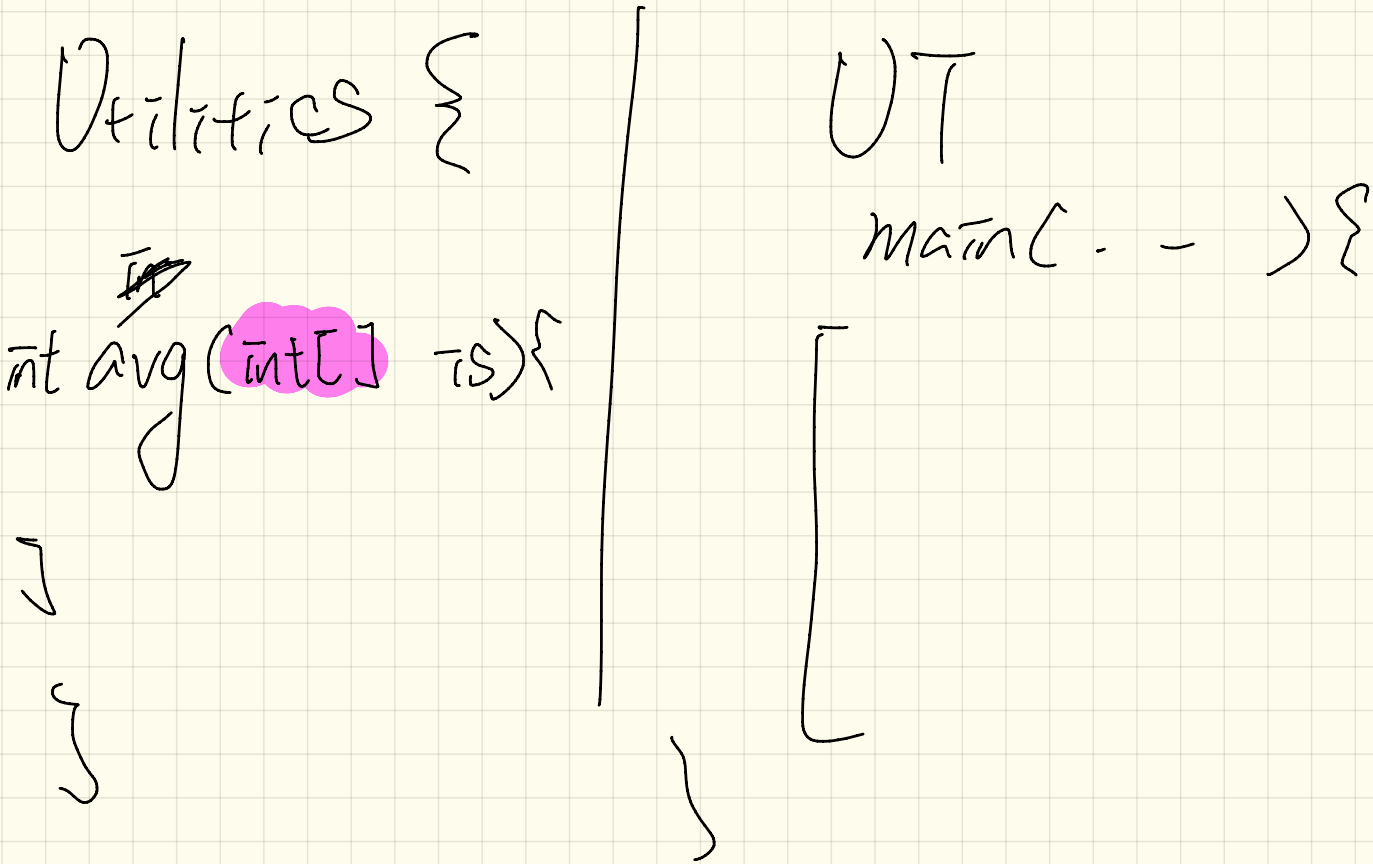
Monday Feb. 12

Lecture 6


Utilities {
int avg(int[] is){
}
}
UT
main(. -){
[

```
if (score >= 80.0) {
  System.out.println("A"); }
else { /* score < 80.0 */
  if (score >= 70.0) {
    System.out.println("B"); }
  else { /* score < 70.0 */
    if (score >= 60.0) {
      System.out.println("C"); }
    else { /* score < 60.0 */
      System.out.println("F");
    }
  }
}
```

score

75

Flow Chart?

F

f(C) {

X [

} else { // !C

[

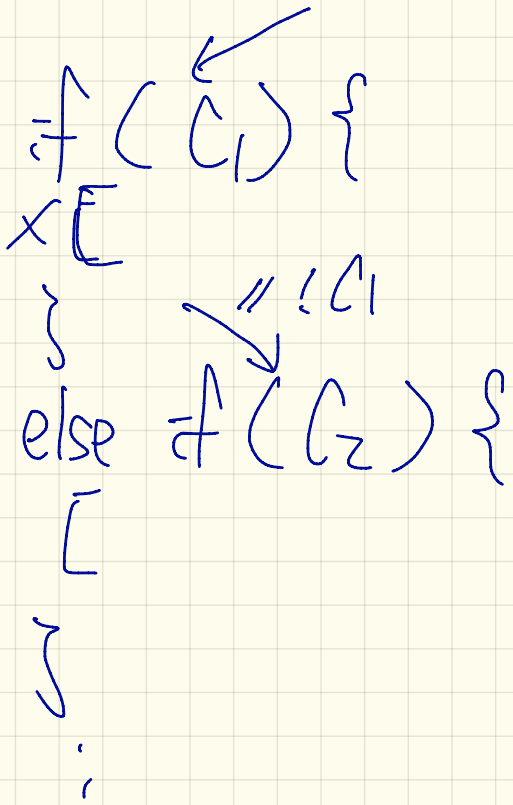
}

```
if (score >= 80.0) {
  System.out.println("A");
}
else if (score >= 70.0) {
  System.out.println("B");
}
else if (score >= 60.0) {
  System.out.println("C");
}
else {
  System.out.println("F");
}
```

Score

75

Flow Chart?



```
String letterGrade = "F";
if (score >= 80.0) {
  letterGrade = "A";
}
else if (score >= 70.0) {
  letterGrade = "B";
}
else if (score >= 60.0) {
  letterGrade = "C";
}
```

missing else

Inputs:

score = 85
75
65
→ 55

45

score

If you have missed the else branch, make sure your variable is initialized.

```
1  int x = input.nextInt();
2  int y = 0;
3  if (x >= 0) {
4    System.out.println("x is positive");
5    if (x > 10) { y = x * 2; }
6    else if (x < 10) { y = x % 2; }
7    else { y = x * x; }
8  }
9  else { /* x < 0 */
10   System.out.println("x is negative");
11   if(x < -5) { y = -x; }
12 }
```

Compound

$!(x \geq 0)$
$\Leftrightarrow$
$x < 0$

How many if-statement are in the above program?

Q. Give a value of x, s.t. L11 is executed.

```
for (int i=0; i<100; i++) {
    System.out.println("HW");
}
```

S.C.

[0, 99]

99 - 0 + 1 = 100

i	i<100
0	T
1	T
...	...
99	T
100	F

How many times to check S.C.? 100 iterations

```
for (int i=1; i<20; i+=2) {
    System.out.println("HW");
}
```

S.C.

Iterations

i	i<20
1	T
3	T
5	T
...	...
19	T
21	F

How many times to check S.C.? 100 iterations

i	j
1	1
3	2
5	3
⋮	
199	100

$i = 2j - 1$

100

```
for (int count = 0; count < 100; count++){
    println("Hw" + count);
}
```

100 iterations

Hw 0
Hw 1
Hw 2
⋮
Hw 99

```
for (int count = 1; count <= 100; count++){
    println("Hw" + count);
}
```

100 iterations

Hw 1
Hw 2
Hw 3
⋮
Hw 100

```
int i = 1;
for( ; i<=5 ; ){
    i++;
    println(i);
```

3 →

i	i<=5	p(i)
1	T	2
2	T	3
3	T	4
4	T	5
5	T	6
6	F	

while loop

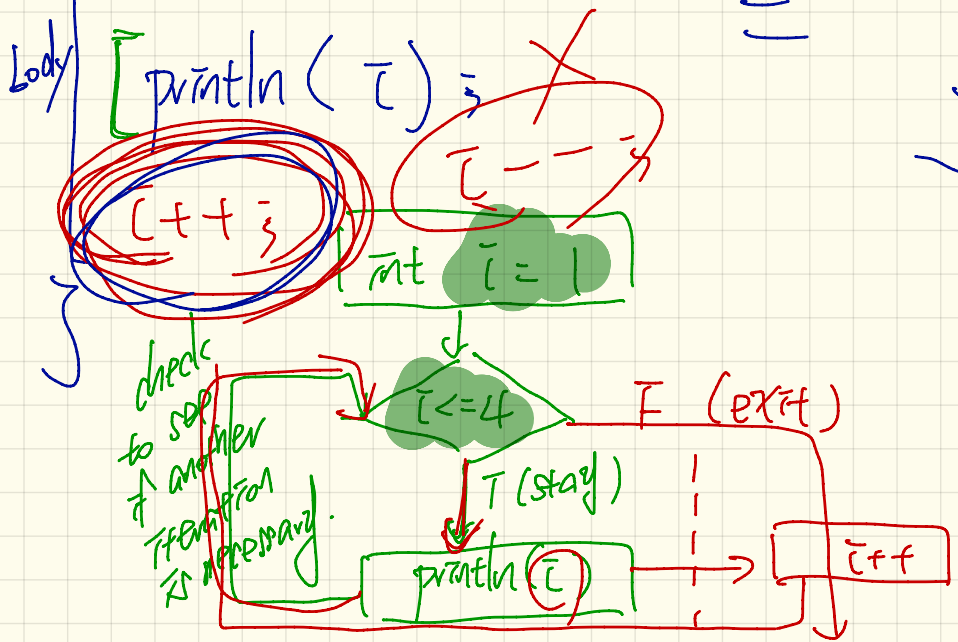
```
int i = 1;
while ( i <= 4 ) {
    println ( i );
    i++;
}
```

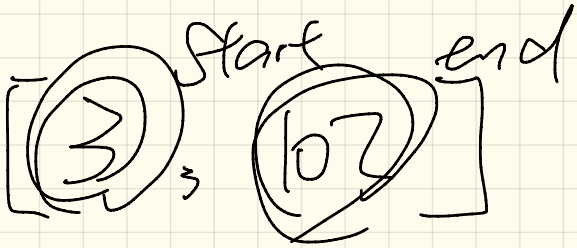
S.C.

Body

for loop

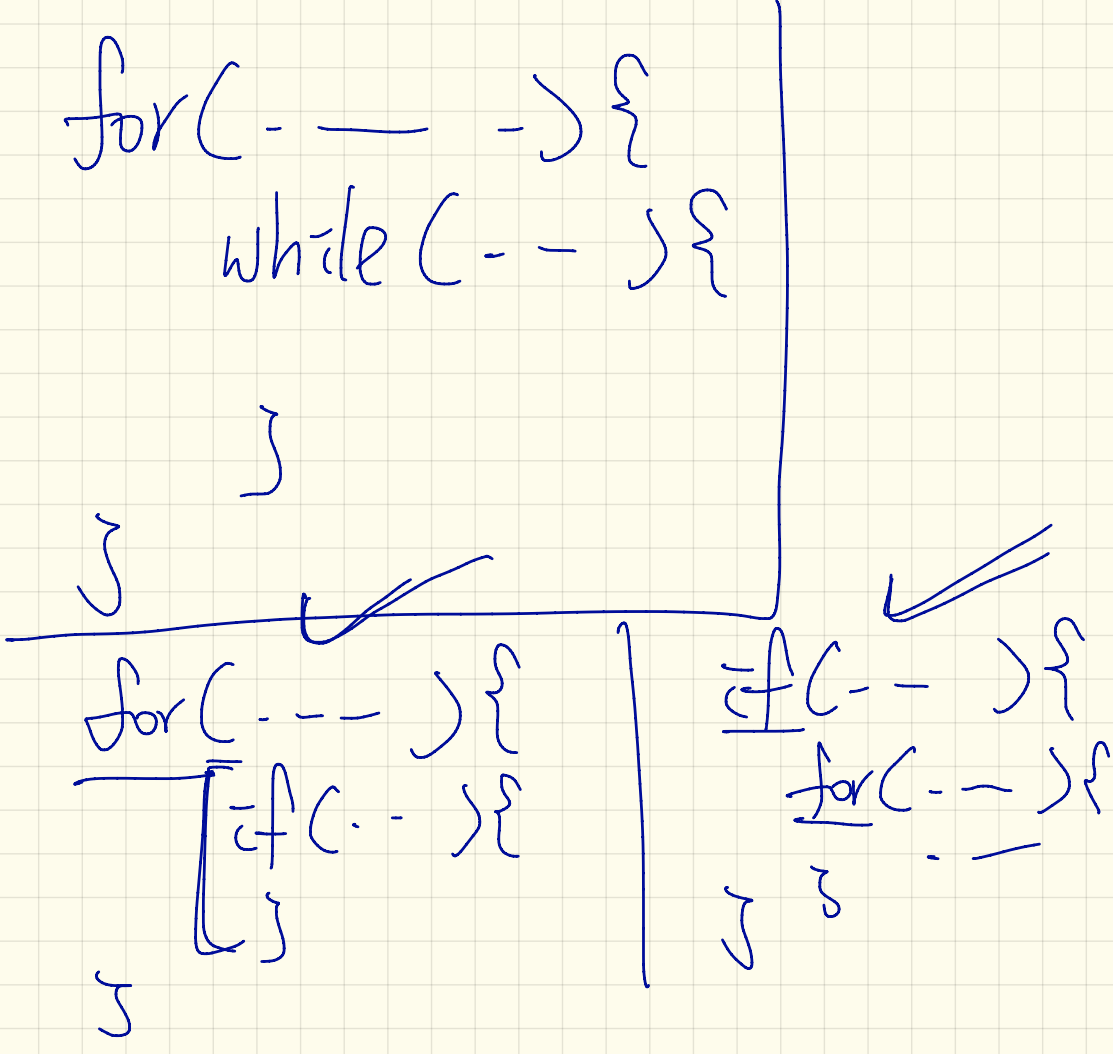
```
for ( int i = 1; i <= 4; i++ ) {
    println ( i );
}
```

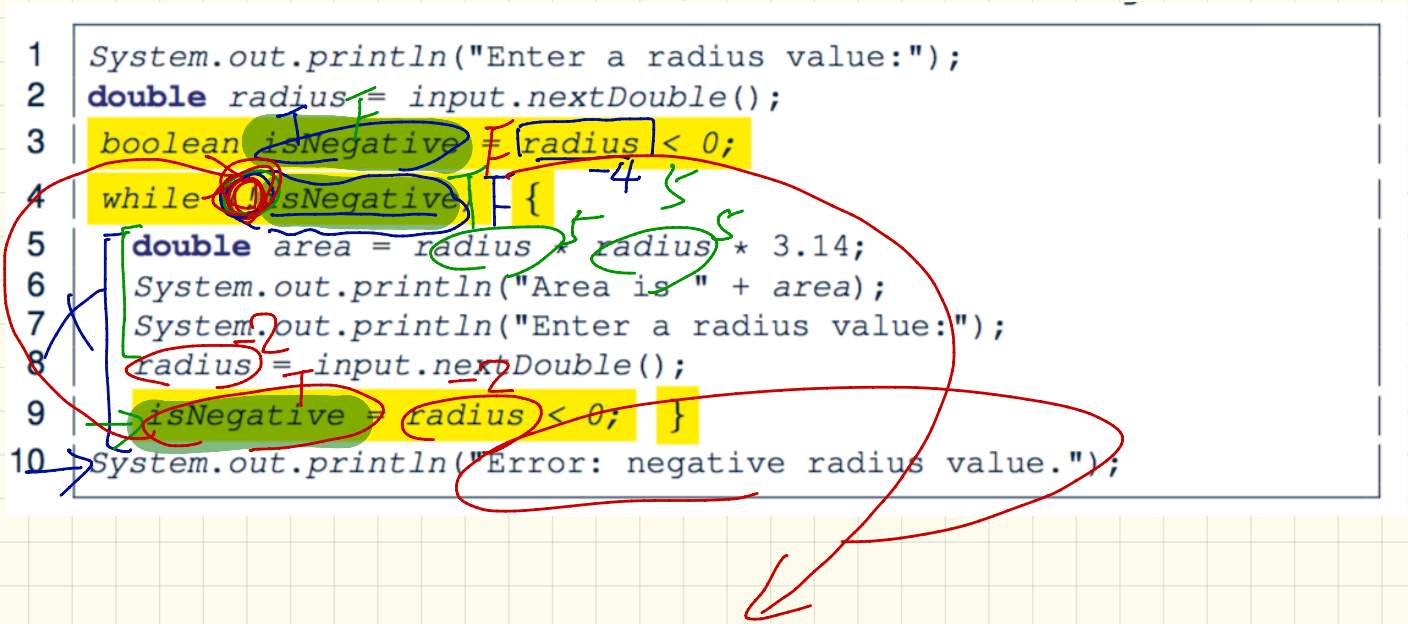




3, 4, . . . 102

end − start + 1


for(- — -){
while(- -){
}
}
for(- - -){
if(- -){
}
}
if(- -){
for(- - -){
}
}


input values
-4
5
-2
1 System.out.println("Enter a radius value:");
2 double radius = input.nextDouble();
3 boolean isNegative = radius < 0;
4 while (!isNegative) {
5 double area = radius * radius * 3.14;
6 System.out.println("Area is " + area);
7 System.out.println("Enter a radius value:");
8 radius = input.nextDouble();
9 isNegative = radius < 0; }
10 System.out.println("Error: negative radius value.");

input values .

-4 5

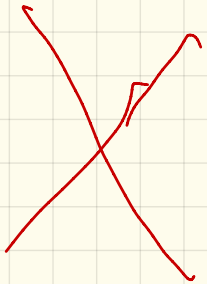
-2

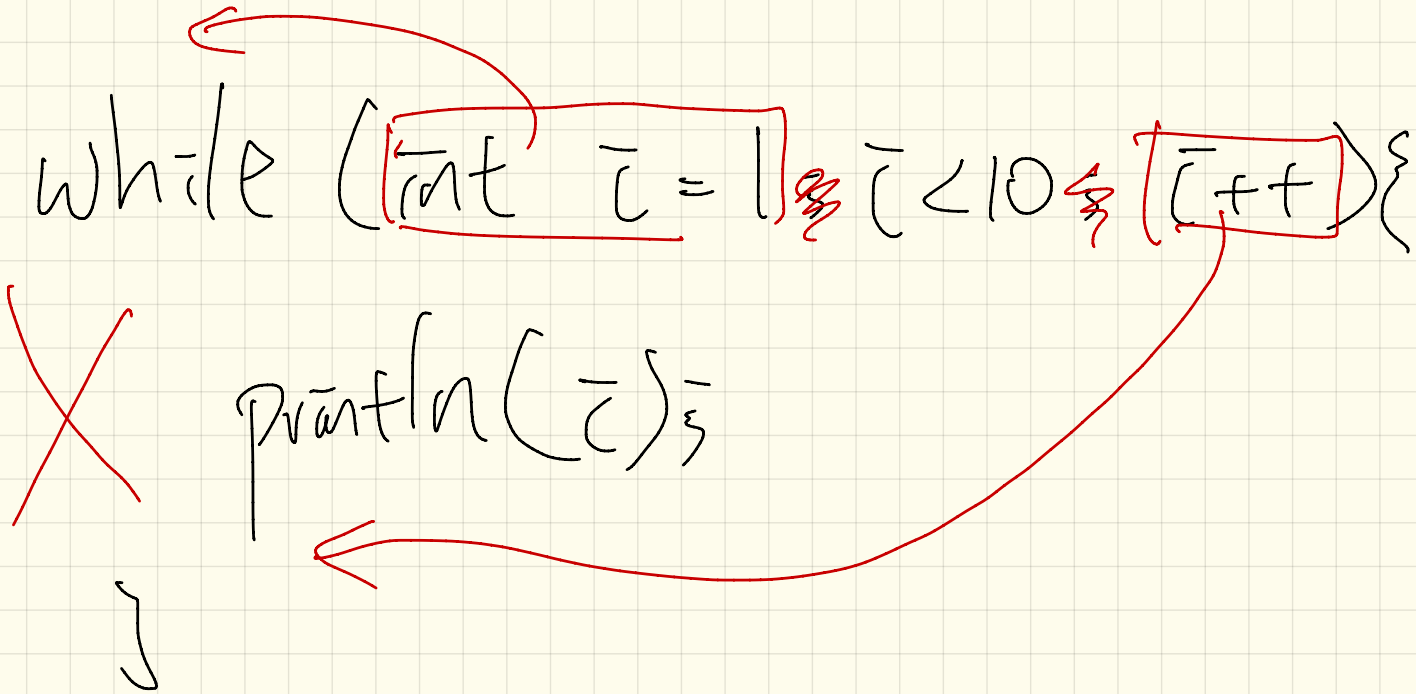
```
1  System.out.println("Enter a radius value:");
2  double radius = input.nextDouble();
3  boolean isPositive = radius >= 0;
4  while (isPositive) {
5    double area = radius * radius * 3.14;
6    System.out.println("Area is " + area);
7    System.out.println("Enter a radius value:");
8    radius = input.nextDouble();
9    isPositive = radius >= 0; }
10 System.out.println("Error: negative radius value.");
```

as long as radius is positive, keep going.

not negative

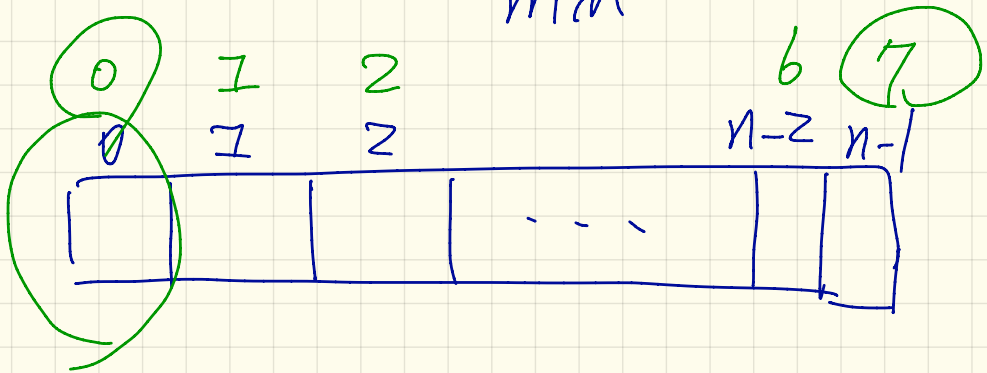
```
int i = 1;
for(; i <= 10;) {
    printf("%d", i);
    i++;
}
```

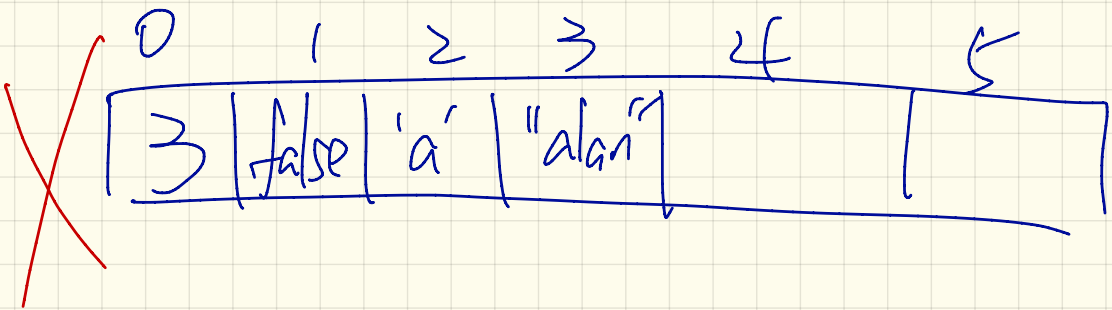



while (int i = 1; i < 10; i++) {
printf(i);
}

Given an array of size n (8)

what's the max index? min




0
1
2
3
4
5
3
false
'a'
"alan"

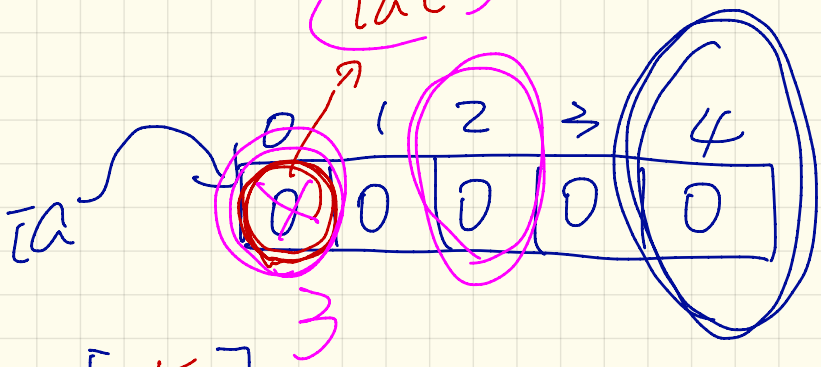
Syntax of array

Declare

```
int[] ia;
```

Assign

① `ia = new int[5];`



size

`ia.length` 5

access

`ia[0]` ~ `ia[ia.length - 1]`

modify

`ia[0] = 3`