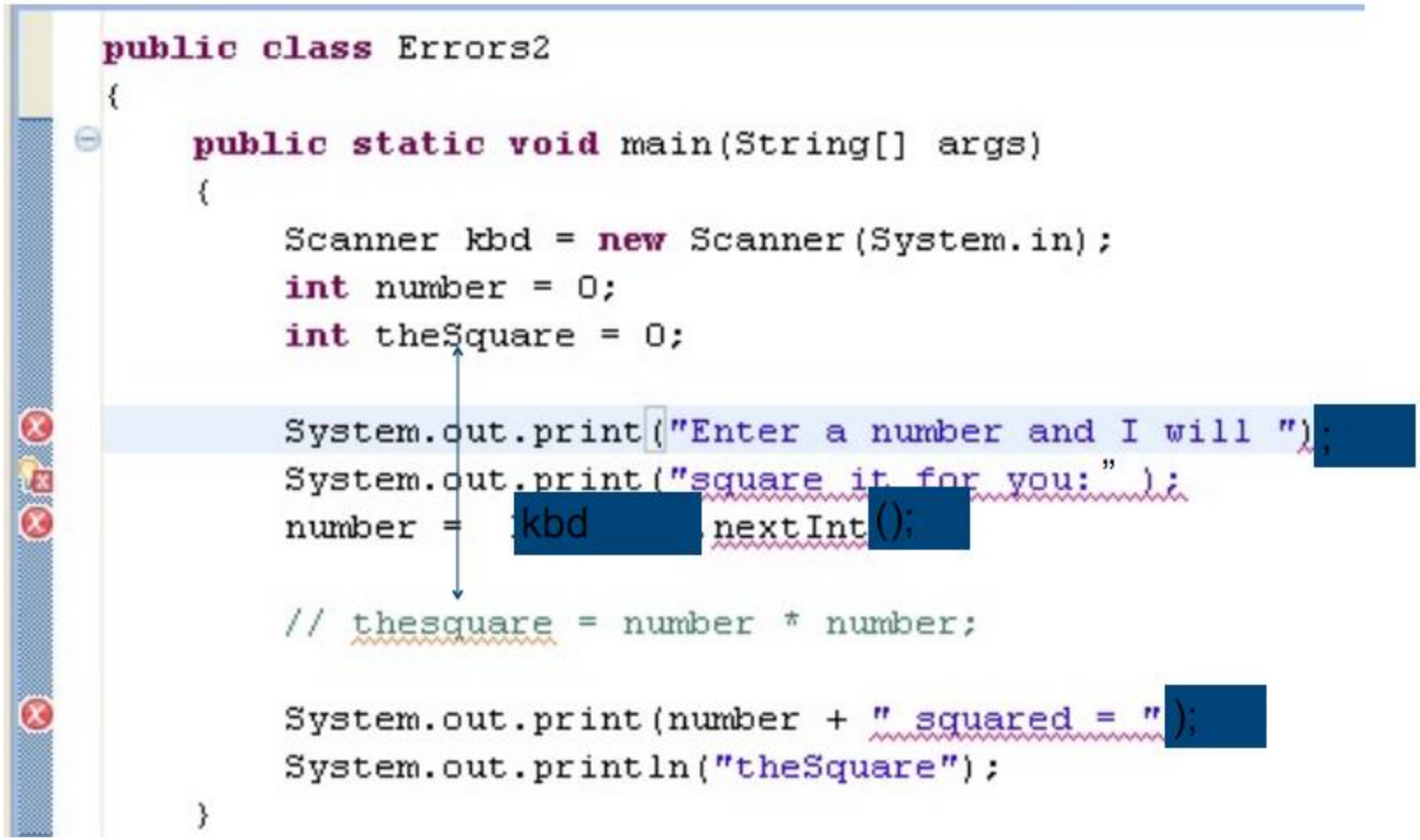
CSE 20
Intro to Computing I

Lecture 12 – Final Review

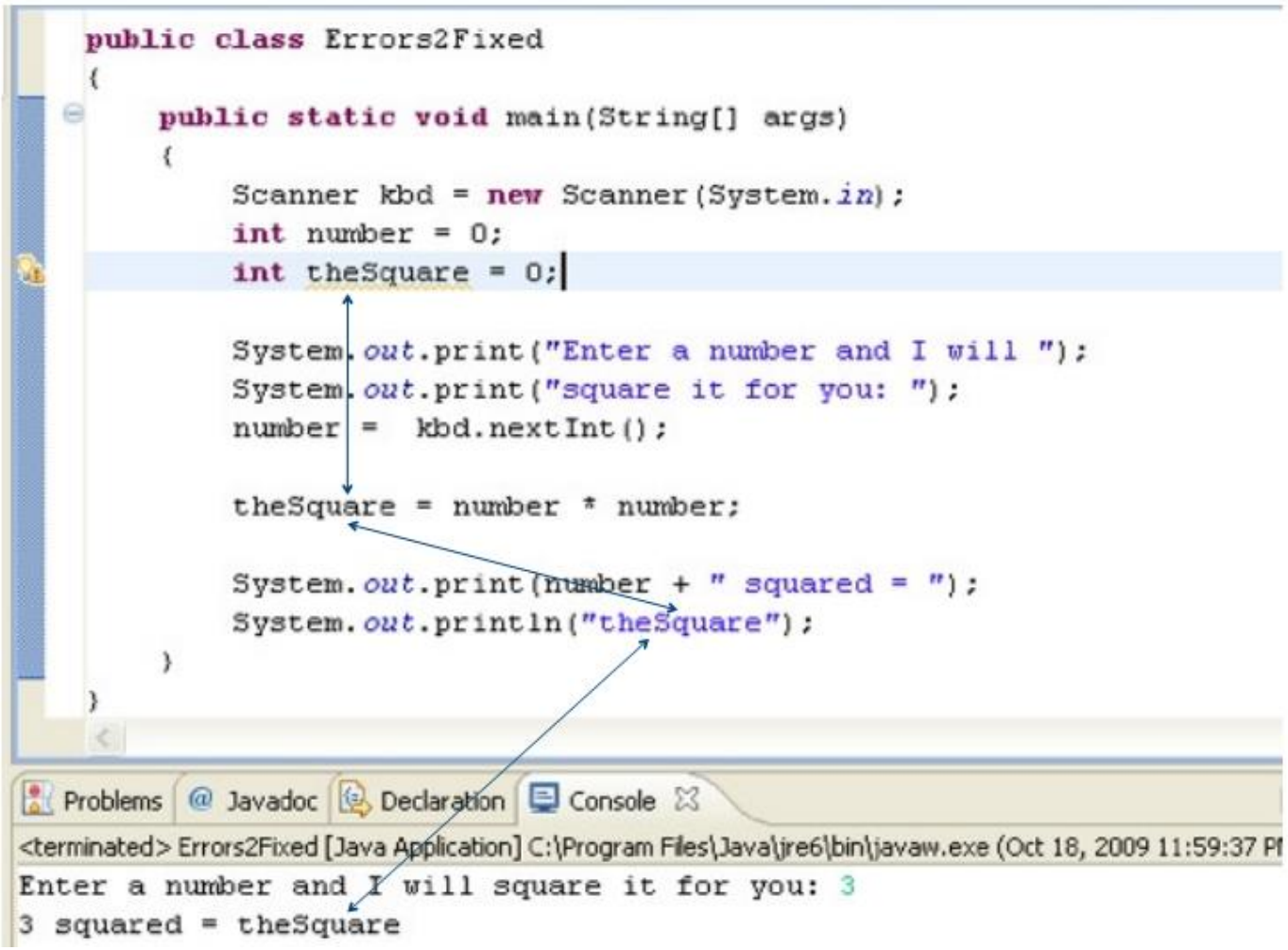
Announcements

- Lab for practice final this week
  - Due 12/11 (Monday) at 11:59 for **ALL sections**
- Final Exam
  - 12/11 (Monday) at 3pm
  - Cover everything
  - Open notes
  - PALS Final Frenzy: Tuesday (12/5) 6-9pm, CA room
- Course evaluation online
  - Fill out by 12/8
  - Better grading scale if more than 70% filled out

Compile errors



Logical errors

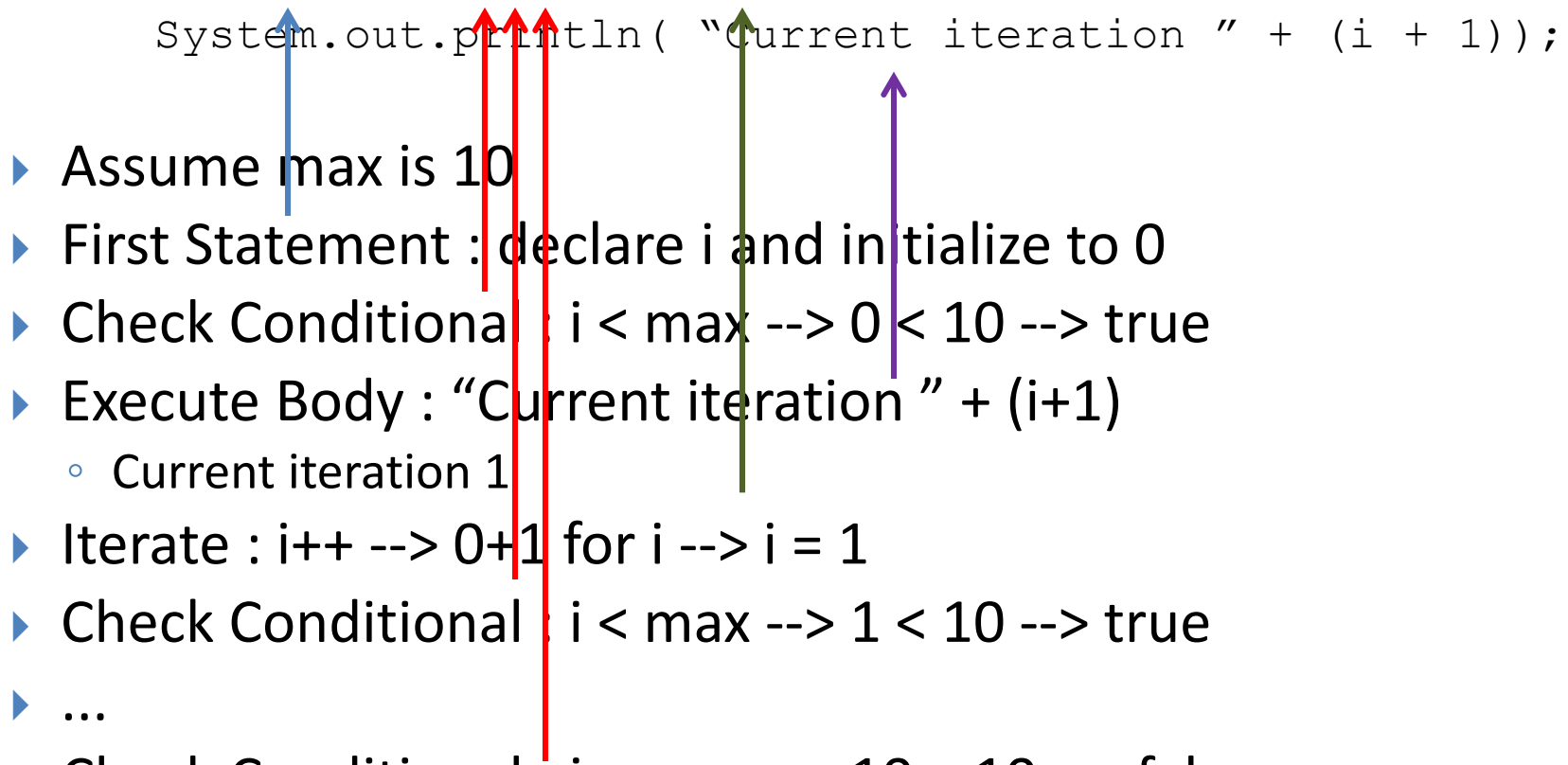


Run-time errors

1. Enter a number and I will square it for you: 3
   3 squared = 9
2. Enter a number and I will square it for you: 30000000
   30000000 squared = -1806942208
3. Enter a number and I will square it for you: 3.0
   Exception in thread "main"
   java.util.InputMismatchException
   at java.util.Scanner.throwFor(Unknown Source)
4. Enter a number and I will square it for you: three
   Exception in thread "main"
   java.util.InputMismatchException
   at java.util.Scanner.throwFor(Unknown Source)
5. Enter a number and I will square it for you: 3000000000
   Exception in thread "main"
   java.util.InputMismatchException:
   For input string: "3000000000"
   at java.util.Scanner.nextInt(Unknown Source)

For Loop

```
for (int i = 0; i < max; i++)
     System.out.println( "Current iteration " + (i + 1));
```



- Assume max is 10
- First Statement : declare i and initialize to 0
- Check Conditional : i < max --> 0 < 10 --> true
- Execute Body : "Current iteration " + (i+1)
  - Current iteration 1
- Iterate : i++ --> 0+1 for i --> i = 1
- Check Conditional : i < max --> 1 < 10 --> true
- ...
- Check Conditional : i < max --> 10 < 10 --> false

For Loop : Output

```
for (int i = 0; i < max; i++)
     System.out.println( "Current oteration " + (i + 1));
```

Current iteration 1
Current iteration 2
Current iteration 3
Current iteration 4
Current iteration 5
Current iteration 6
Current iteration 7
Current iteration 8
Current iteration 9
Current iteration 10

- Total iterations: 10

For Loop : Iterations (max = 20)

- for (int i = 0; i <= max; i++)
  - Starts 0
  - Goes up to 20
  - Iterations = 21
- for (int i = max-1; i > 0; i--)
  - Starts 19
  - Goes down to 1
  - Iterations = 19
- for (int i = 0; i <= max; i+=4)
  - Starts 0
  - Sequence : 0, 4, 8, 12, 16, 20
  - Iterations = 6
- for (int i = 1; i <= max; i*=4)
  - Starts 1
  - Sequence : 1, 4, 16
  - Iterations = 3

For Loop : Iterations (max = 20)

- for (int i = 0; i < max; i++)

  if (i == max / 2)

  break;

  - Starts 0
  - Goes up to 19
  - max / 2 = 20 / 2 = 10
  - when i is 10 it breaks out
  - Iterations = 11

For Loop : Iterations (max = 20)

- for (int i = 0; i < max; i++)

  if (i == max / 2)

  continue;

  - Starts 0
  - Goes up to 19
  - When i is 10 it continues so goes to i++ and i becomes 11 and loop keeps going
  - Iterations = 20

What does this code print?

```
int LITTLE = 5, MEDIUM = 10, BIG = 20;

int i,j, n = 9,temp;
int[] num= new int[BIG];

num[0]=9; num[1]=3; num[2]=4; num[3]=8; num[4]=2;
num[5]=1; num[6]=5; num[7]=6; num[8]=7; num[9]=10;

num[LITTLE] = 1;
i = MEDIUM;
while (i < BIG) {
    num[i] = 2*num[i % MEDIUM];
    i++;
}

for (j=0;j<BIG;j++) {
    if (j % LITTLE == 0)
       System.out.println();
    System.out.print(num[j]+", ");
}
```

Creates an array of size 20

Initialize first 10 values
Rest remains 0

num[5] = 1

i starts at 10

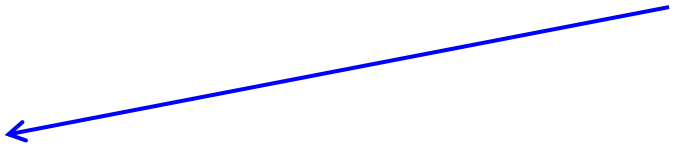
num[10] = 2*num[10 % 10] = 2*num[0]
num[11] = 2*num[1]
num[12] = 2*num[2]
num[13] = 2*num[3]
num[14] = 2*num[4]
num[15] = 2*num[5]
num[16] = 2*num[6]
num[17] = 2*num[7]
num[18] = 2*num[8]
num[19] = 2*num[9]

What does this code print?

9	3	4	8	2	1	5	6	7	10
18	6	8	16	4	2	10	12	14	20

```
for (j=0;j<BIG;j++) {
    if (j % LITTLE == 0)
       System.out.println();
    System.out.print(num[j]+", ");
}
```

j starts at 0



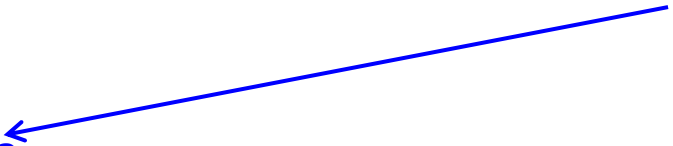
9,

What does this code print?

9	3	4	8	2	1	5	6	7	10
18	6	8	16	4	2	10	12	14	20

```
for (j=0;j<BIG;j++) {
    if (j % LITTLE == 0)
       System.out.println();
    System.out.print(num[j]+", ");
}
```

j = 1



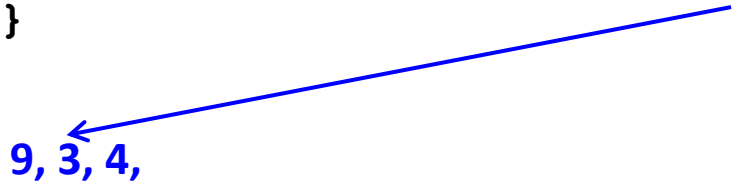
9, 3,

What does this code print?

9	3	4	8	2	1	5	6	7	10
18	6	8	16	4	2	10	12	14	20

```
for (j=0;j<BIG;j++) {
    if (j % LITTLE == 0)
       System.out.println();
    System.out.print(num[j]+", ");
}
```

j = 2



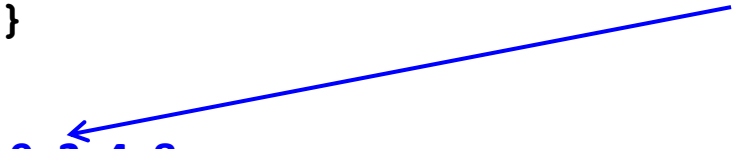
9, 3, 4,

What does this code print?

9	3	4	8	2	1	5	6	7	10
18	6	8	16	4	2	10	12	14	20

```
for (j=0;j<BIG;j++) {
    if (j % LITTLE == 0)
       System.out.println();
    System.out.print(num[j]+", ");
}
```

j = 3



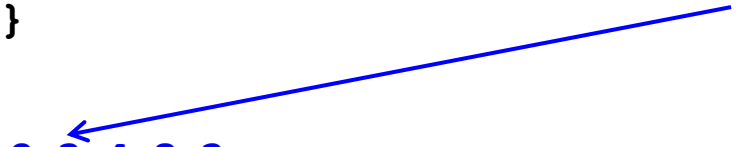
9, 3, 4, 8,

What does this code print?

9	3	4	8	2	1	5	6	7	10
18	6	8	16	4	2	10	12	14	20

```
for (j=0;j<BIG;j++) {
    if (j % LITTLE == 0)
       System.out.println();
    System.out.print(num[j]+", ");
}
```

j = 4



9, 3, 4, 8, 2,

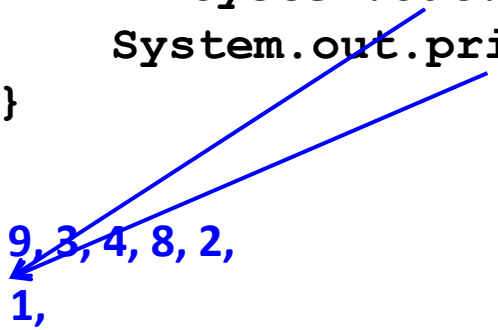
What does this code print?

9	3	4	8	2	1	5	6	7	10
18	6	8	16	4	2	10	12	14	20

```
for (j=0;j<BIG;j++) {
    if (j % LITTLE == 0)
       System.out.println();
    System.out.print(num[j]+", ");
}
```

j = 5

(5 % 5) is 0



What does this code print?

9	3	4	8	2	1	5	6	7	10
18	6	8	16	4	2	10	12	14	20

```
for (j=0;j<BIG;j++) {
    if (j % LITTLE == 0)
       System.out.println();
    System.out.print(num[j]+", ");
}
```

9, 3, 4, 8, 2,
1, 5, 6, 7, 10,
18, 6, 8, 16, 4,
2, 10, 12, 14, 20,

Array index and Value

int [] n = new int[6];	0 0 0 0 0 0
int i = 3; n[0] = 5;	5 0 0 0 0 0
n[i] += 5;	5 0 0 5 0 0
n[2+i] = n[0] + 1;	5 0 0 5 0 6
n[4-i] += 1;	5 1 0 5 0 6
n[1] = n[0] + n[1]+ n[2] + n[3] + n[4];	5 11 0 5 0 6
n[1+2] = 1+i;	5 11 0 4 0 6
n[n.length-1] = n[0];	5 11 0 4 0 5
n[n.length-i] = n.length-3;	5 11 0 3 0 5
n[i*2-1] = n[2] * n[2];	5 11 0 3 0 0

Sum of Positive and Negative

```
int positive = 0, positive_sum = 0;
int negative = 0, negative_sum = 0;
int num;

System.out.print(“Please enter an int ”);
while ((num = input.nextInt()) != 0) {
   if (num > 0) {
       positive++;
       positive_sum += num;
   }

  if (num < 0) {
      negative++;
      negative_sum += num;
   }   System.out.print(“Please enter an int ”);
}
if (positive > 0)
    System.out.println(“Positive average” + positive_sum/positive);

if (negative > 0)
    System.out.println(“Negative average” + negative_sum/negative);
```