CSE 8A Lecture 11

- Reading for next class: 6.6-6.8
- Today's topics:
  - Precedence and Associativity
  - Increment Operator
  - More practice with if-statements and while
  - Logical Operators && || !
  - boolean data type
  - Building more complex programs

Precedence and Associativity of Operators

1) PRECEDENCE

```
2 + 3 * 4
```

---> A) 20
6

B) 14
6

2) ASSOCIATIVITY

```
2 + 3 - 4  + 5
```

---> C) 14

-4

TABLE of PRECEDENCE and ASSOCIATIVITY

Operator	Associativity
- (unary)	right to left
* / %	left to right
+ -	left to right
< <= > >=	left to right
== !=	left to right
=	right to left

++ Pre-Increment and Post Increment ++

```
int i = 1, j = 2, k ;
++i;
System.out.println( i );
j--;
System.out.println( j );
i = j = 2;
k = ++i;
System.out.println( "i:" + i + "  k:" + k );
k = j++;
System.out.println( "j:" + j + "  k:" + k );
```

```
A)  2
    1
    i:3  k:3
    j:3  k:2

B)  2
    1
    i:2  k:3
    j:2  k:3

C)  1
    2
    i:3  k:2
    j:3  k:3
```

1) Solo: (30 sec)
2) Discuss/Group: (1 min)

Review: If-statements

```
int x = 4;

if( --x < 4 )
  if ( x++ > 2 )
    System.out.println( x + 3 );

if( x > 0 && x < 10 )
  System.out.println( x += 3 );
```

2. What does the code above print?

A. 7
7

B. 6
7

C. 7
10

D. other

1) Solo: (30 sec)
2) Discuss/Group: (1 min)

Review: If-statements

```
int x = 4;

if( --x < 4 )
  if ( x++ > 3 )
  {
     x += 3;
     System.out.println( x );
  {
  else
     System.out.println( x );
```

2. What does the code above print?

A. 3
B. 6
C. 7
D. other

1) Solo: (30 sec)
2) Discuss/Group: (1 min)

Review: If-statements

```
int x = 4;

if( x-- < 5 )

  if( x++ > 4 )
    System.out.println( x += 3 );

  else if( x < 2 || x > 2 )
    x += 2;

System.out.println( x );
```

2. What does the code above print?

A. 8
8

B. 6

C. 7
9

D. other

1) Solo: (30 sec)
2) Discuss/Group: (1 min)

Review: If-statements

Which statement is most true about ONE execution of this code?

```
if (Math.abs(topAv - botAv) < 10)
  topP.setColor(Color.WHITE);
else
  topP.setColor(Color.BLACK);
```

A. It is possible BOTH Section A AND Section B will be executed

B. Either Section A will be executed, OR Section B will be executed, but NOT BOTH

C. It is possible neither Section A nor Section B will be executed.

1) Solo: (30 sec)
2) Discuss/Group: (1 min)

Review: If-statements

Which statement is most true about ONE execution of this code?

```
if (Math.abs(topAv - botAv) < 10)
  topP.setColor(Color.WHITE);
else if (Math.abs(topAv - botAv < 50)
  topP.setColor(Color.GREY);
else
   topP.setColor(Color.BLACK);
```

A. Exactly one of Section A, Section B, or Section C will be executed

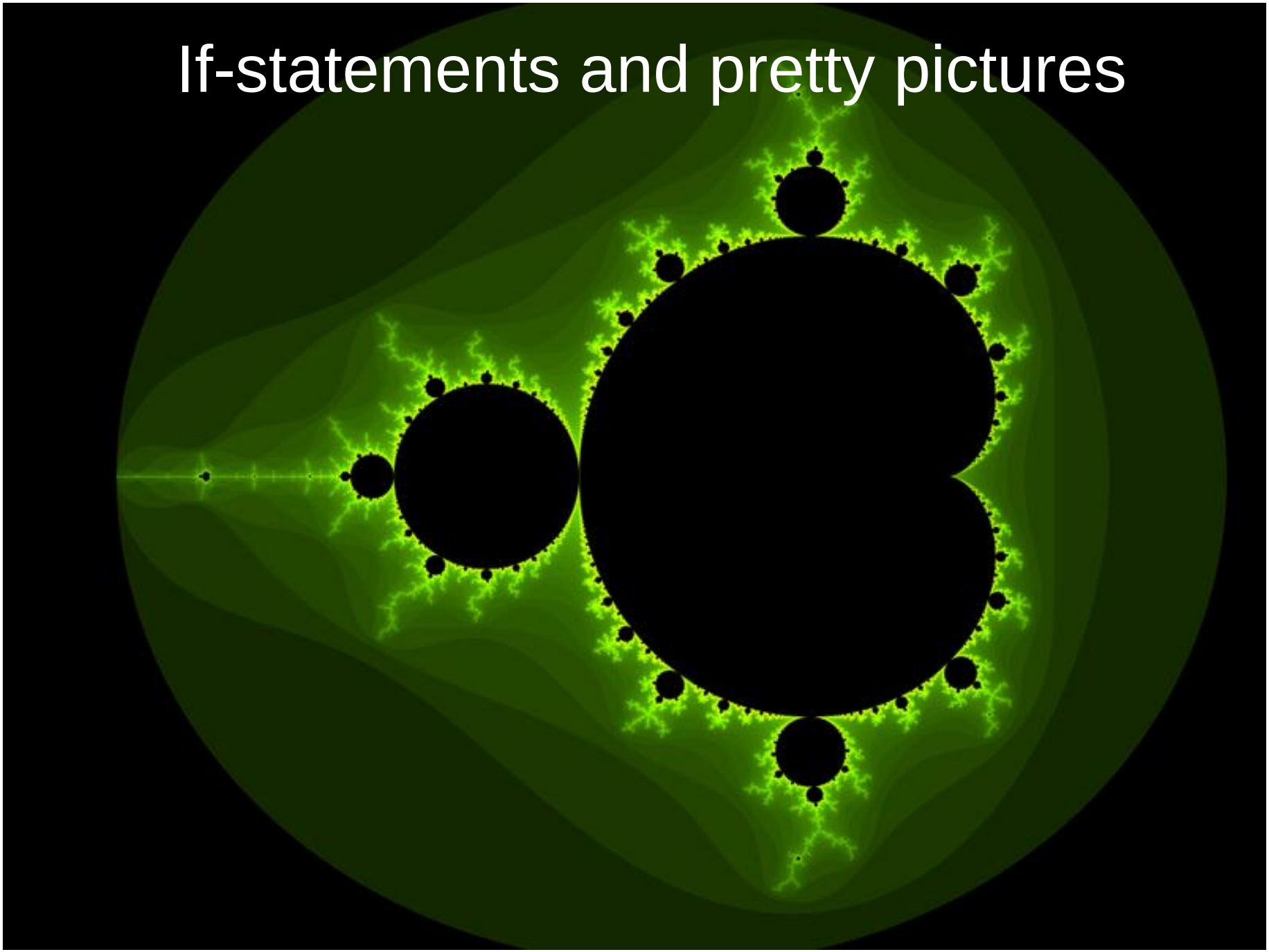
B. It is possible that both Section B and Section C will be executed

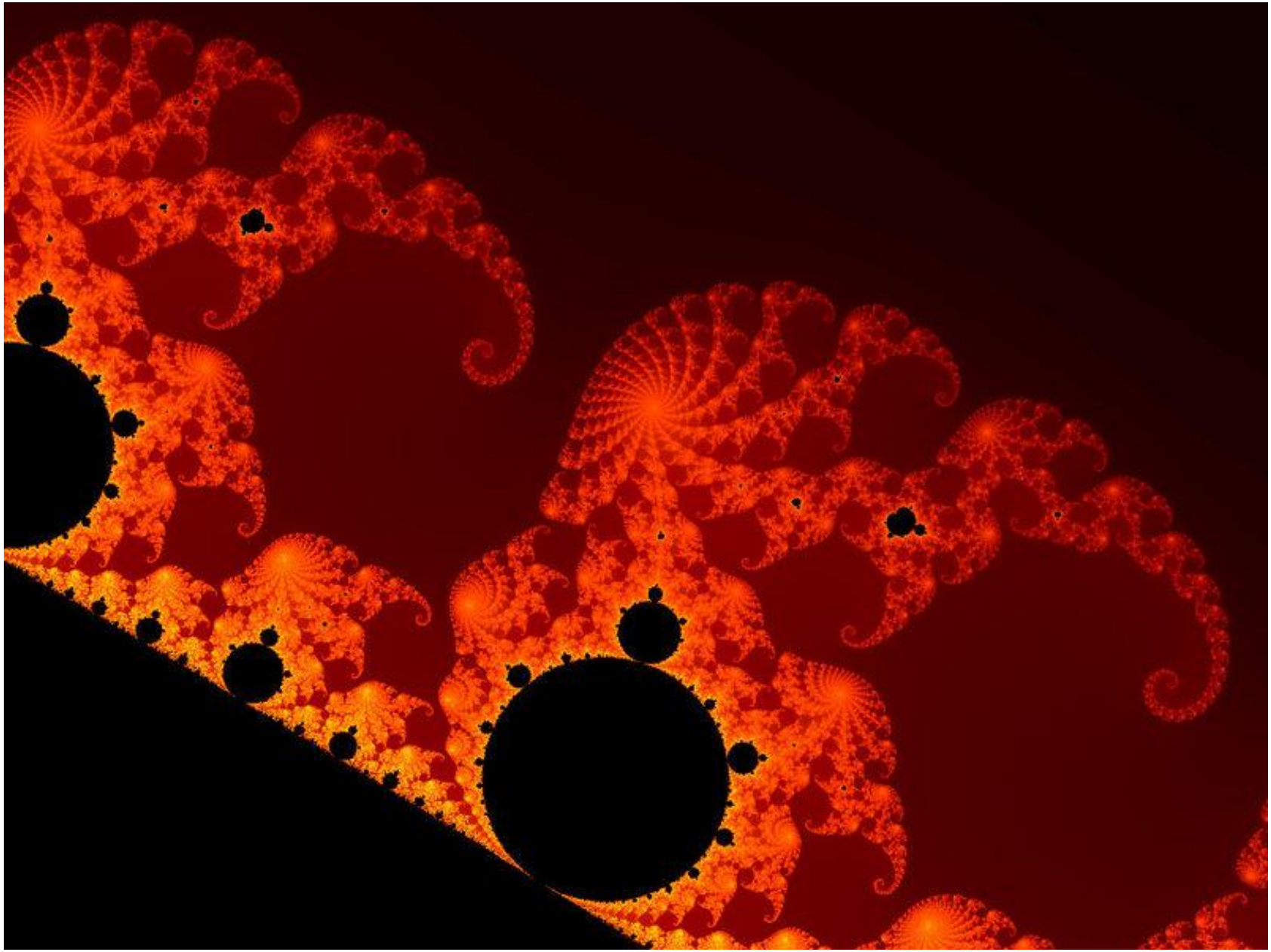
C. It is possible that both Section A and Section C will be executed

D. It's possible Sections A, B, and C will be executed

Confused? See page 187 for execution flow diagram

If-statements and pretty pictures





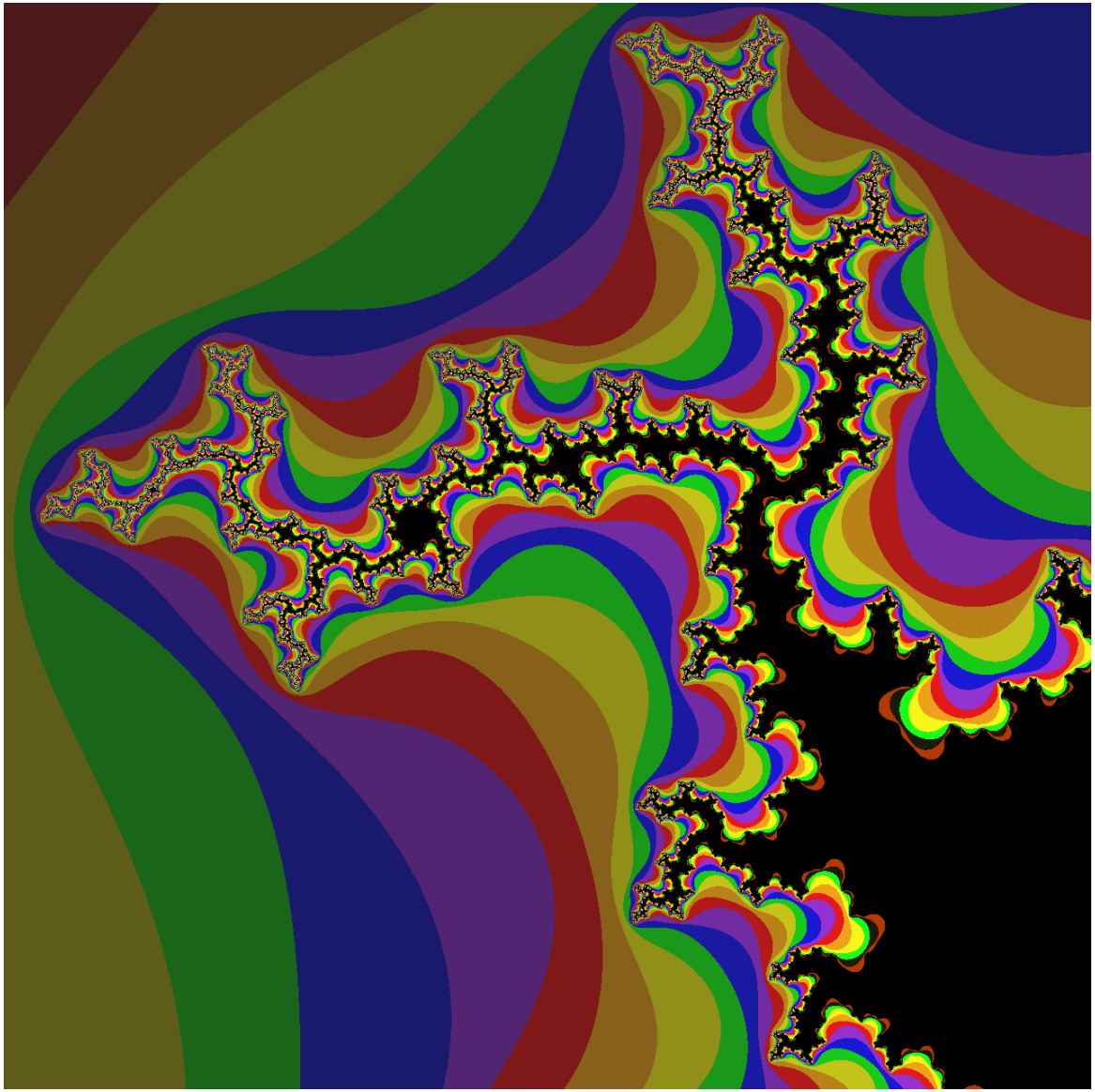


Image courtesy of Aaron Gable, CS 5 Black

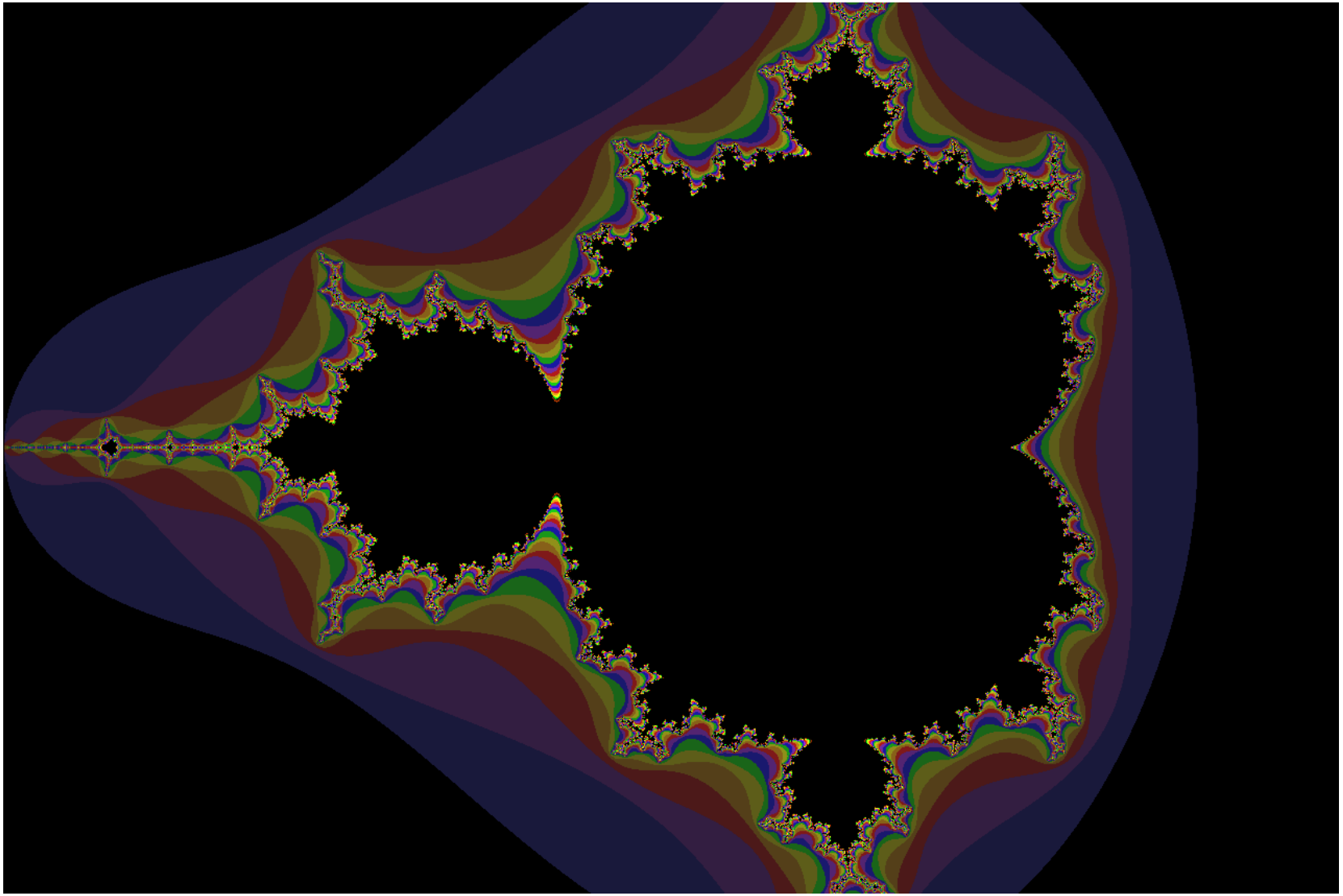


Image courtesy of Aaron Gable, CS 5 Black

CS Concept: Booleans *are* values

```
if ( absValZ < 2.0 )
{
   return true;
}
else
{
    return false;
}
```

Which of the following is equivalent to the above code?

```
A.return absValZ;
B.return absValZ < 2.0;
C.return absValZ >= 2.0;
D.None of these
```

1) Solo: (30 sec)
2) Discuss/Group: (1 min)

Review: loops

```
int x = 6;

while( --x > 2 )
  System.out.println( x - 2 );

System.out.println( x );
```

2. What does the code above print?

A.	B.	C.	D.
4	3	3	other
3	2	2	
2		1	
		2	

1) Solo: (30 sec)
2) Discuss/Group: (1 min)

Review: loops

```
boolean b = false ;

while( b == true )

  System.out.println( "hi" );

System.out.println( "bye" );
```

2. What does the code above print?

A. hi
bye

B. bye

C. hi
hi

D. other

1) Solo: (30 sec)
2) Discuss/Group: (1 min)

Review: loops

```
boolean b = false ;

while( b = true )     // careful

  System.out.println( "hi" );

System.out.println( "bye" );
```

2. What does the code above print?

A. hi
bye

B. bye

C. hi
hi

D. other

Summary of Concepts

- if-statements and while loops
- Precedence and Associativity
- Increment Operator
- Logical Operators && || !
- boolean data type

TODO

- Reading for next class: 6.6-6.8
- Finish PSA5