Semester One Review

Can You Dig It?

Operations Question

- What value is stored in x?

```
double x = 14 / 5 + 14 % 5;
```

Operations Question

- What value is stored in x?

```
double x = 14 / 5 + 14 % 5;
```

14 /5 → 2
14%5 → 4
14/5 + 14%5 → 6
double x = 14/5 + 14%5; → 6.0

Randomness Question

- What range of values will this code generate?

```
(int)(Math.random() * 6) - 8
```

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```

Math.random() ⟶ [0, 1)
Math.random() * 6 ⟶ [0, 6)
(int)(Math.random() * 6) ⟶ {0, 1, 2, 3, 4, 5}
(int)(Math.random() * 6) - 8 ⟶ {-8, -7, -6, -5, -4, -3}

Randomness Question

- What range of values will this code generate?

```
(int)(Math.random() * (10 - 6 + 1) + 6
```

Randomness Question

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```
(int)(Math.random() * (10 - 6 + 1) + 6
```

Math.random() ⟶ [0, 1)
Math.random() * 5 ⟶ [0, 5)
(int)(Math.random() * 5) ⟶ {0, 1, 2, 3, 4}
(int)(Math.random() * 5) + 6 ⟶ {6, 7, 8, 9, 10}

Boolean Operator's

- What is the order in which this boolean expression will be evaluated?

B && A || !C

Boolean Operator's

- What is the order in which this boolean expression will be evaluated?

B && A || !C

!C
B && A
(B && A) || !C

Demorgan's Law

- What is the negation of this expression?

x == 3 && y < 5

Demorgan's Law

- What is the negation of this expression?

x == 3 && y < 5

x != 3 || y >= 5

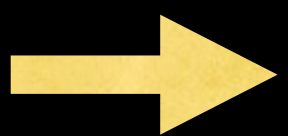
Conditionals Question

- What is x's value after this code executes?

```
int x = 2;
if(x < 3)
   x *= 2;
if(x >3)
   x--;
else
   x = x + 3;
```

Conditionals Question

- What is x's value after this code executes?



```
int x = 2;
if(x < 3)
   x *= 2;
if(x >3)
   x--;
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   x = x + 3;
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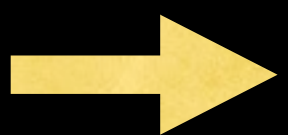
x = 2

Conditionals Question

- What is x's value after this code executes?



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int x = 2;
if(x < 3)
  x *= 2;
if(x >3)
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else
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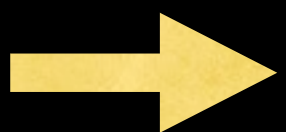
x = 2

Conditionals Question

- What is x's value after this code executes?



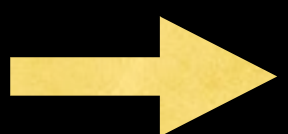
```
int x = 2;
if(x < 3)
   x *= 2;
if(x >3)
   x--;
else
   x = x + 3;
```

x = 4

Conditionals Question

- What is x's value after this code executes?

```
int x = 2;
if(x < 3)
   x *= 2;
if(x >3)
   x--;
else
   x = x + 3;
```

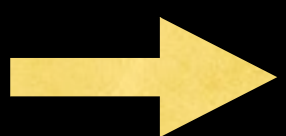


x = 4

Conditionals Question

- What is x's value after this code executes?

```
int x = 2;
if(x < 3)
   x *= 2;
if(x >3)
   x--;
else
   x = x + 3;
```



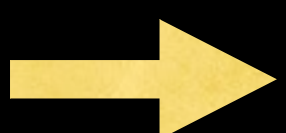
x = 3

Conditionals Question

- What is x's value after this code executes?

```
int x = 2;
if(x < 3)
   x *= 2;
if(x >3)
   x--;
else
   x = x + 3;
```

x = 3



Classes Question

- A WaterBucket class needs to hold an amount of water and have a maximum capacity
- What code what you need to write to represent these properties?

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- A WaterBucket class needs to hold an amount of water and have a maximum capacity
- What code what you need to write to represent these properties?

```
public class WaterBucket
{
  private int amount;
  private int capacity;
}
```

Classes Question

- What would an appropriate constructor for the class look like?

Classes Question

- What would an appropriate constructor for the class look like?

```
public class WaterBucket
{
  private int amount, capacity;

  public WaterBucket(int a, int c)
  {
    amount = a;
    capacity = c;
  }
}
```

Recursion Question

- What is mystery(10)?

```
public int mystery(int a)
{
  if(a == 1)
        return 3;
  else
        return mystery(a-1) + 2;
}
```

Recursion Question

- What is mystery(10)?

```
public int mystery(int a)
{
  if(a == 1)
      return 3;
  else
      return mystery(a-1) + 2;
}
```

m(1) = 1
m(2) = m(1) + 2 = 3
m(3) = m(2) + 2 = 5
m(4) = m(3) + 2 = 7
...
m(10) = m(9) + 2 = 21

Identify the parts

```
int x = (int)(Math.random()*6);
```

int	
x	
=	
(int)	
Math	
random	
*	
6	

Identify the parts

```
int x = (int)(Math.random()*6);
```

int	type
x	variable name
=	assignment operator
(int)	data cast
Math	class name
random	method name
*	multiplication op
6	numeric literal

Identify the parts

```
public int getSum(int a, int b) {
  return a + b;
}
```

public	
int	
getSum	
int a	
return a + b	

Identify the parts

```
public int getSum(int a, int b) {
  return a + b;
}
```

public	access permissions
int	return type
getSum	method name
int a	parameter
return a + b	return statement

Identify the parts

```
public class WaterBucket {
  private int capacity;

  public WaterBucker(int c) {
    capacity = c;
  }
}
```

public	
WaterBucket	
private int capacity	
public **WaterBucket**	
int c	

Identify the parts

```
public class WaterBucket {
  private int capacity;

  public WaterBucker(int c) {
    capacity = c;
  }
}
```

public	class access permissions
WaterBucket	class name
private int capacity	instance field / property
public **WaterBucket**	constructor name
int c	parameter

Identify the parts

```
public void paint(Graphics g, int x, int y) {
  g.setColor(Color.RED);
  g.fillRect(x, y, 20, 20);
}
```

void	
paint	
Graphics	
g	
Color	
RED	
fillRect	

Identify the parts

```
public void paint(Graphics g, int x, int y) {
  g.setColor(Color.RED);
  g.fillRect(x, y, 20, 20);
}
```

void	return type
paint	method name
Graphics	class name / type
g	variable name
Color	class name
RED	class variable
fillRect	method name