1. A) There are four events:
   - When the world starts
   - While penguin distance to lemur > 0.9
   - When lemur distance to penguin < 1
   - When the mouse clicks on an object

   B) There are four event handlers with one having multiple parts:
   - World.myFirstMethod
     - All parts of the BDE: penguin turn to face lemur, penguin move forward .5 meters, and penguin say Hello
   - World.something
   - The mouse moving an object

   C) The penguin faces the lemur and repeatedly moves towards him until he is .5 meters from the lemur and he says hello. As the penguin reaches the lemur, the When event becomes true and the lemur turns to face the tortoise and moves close to it. The BDE is true again so the penguin moves over the the lemur and says hello. The When event is true again but the lemur is already close to and facing the tortoise.

   D) A – if the tortoise is moved to the well. Nothing else happens.

   B – if the lemur is moved to the well, then the penguin will move over to the lemur and say hello, the lemur will then move over to the tortoise and then the penguin will move over to the lemur’s new position and say hello again.

   C – if the penguin is moved to the well, then the penguin will move over to the lemur and say hello.

2. turtle
cat
penguin
tortoise	
tortoise
lemur
lemon
joeiy

3. A) Mystery returns a number

B) temp is a local variable
C) creatures is a list of objects
D) something is a parameter
E) mystery returns the number of objects in the list creatures that are a distance less than 2 from the object something.

4. A) The troll says yikes 10 times.
   B) The troll’s club turns 150 times.
   C) The dukePrince turns 50 times.

5. A. Score.increment

B) The score increase for the soccerBall and football are the same, the score is increased by 1 point for the soccerBall and a random integer 3, 4, or 5 for the football. The score is increased by four points for the basketball. By adding an additional event for the basketball, both events add 2 to the score when the basketball is clicked on.
6. Code is:

```
world.MakeAllButNumInvisible

No variables

- While
  - world.numberVisible > number
  - world.makeInvisible
```

Alternate code is:

```
world.makeAllButNumInvisible2

No variables

- Loop
  - (world.numberVisible - number) time
  - world.makeInvisible
```

7. Code is:

```
world.sumOfLargeNumbers

No variables

- Loop
  - index from 0 up to (but not including) size of world.values
  - incrementing by 1
  - If
    - item index from world.values > smallest
    - total set value to (total + item index from world.values)
  - Else
    - Do Nothing
  - Return total
```
8. A) Code is:

```
world.NumberChickensOfColor

world.NumberChickensOfColor  chickenColor

123 total = 1

total set value to 0

For all world.chickens, one item_from_chickens at a time

If item_from_chickens .color == chickenColor

total set value to (total + 1)

Else

Do Nothing

Return total
```

B) Code is:

```
world.changeColor

world.changeColor  color1, color2

123 count = 1

count set value to 0 more...

For all world.chickens, one item_from_chickens at a time

If count == 0

If item_from_chickens .color == color1

item_from_chickens set color to color2 more...

count set value to 1 more...

Else

Do Nothing

Else

Do Nothing
```
Alternate Solution:

```
// This method assumes there is at least one chicken of color1

For all world.chickens, one item_from_chickens at a time

If item_from_chickens.color == color1
    chickenToChangeColor set value to item_from_chickens

Else
    Do Nothing

chickenToChangeColor set color to color2
```

Alternate Solution:

```
counter = 1

counter set value to 0

For all world.chickens, one item_from_chickens at a time

If both item_from_chickens.color == color1 and counter == 0
    item_from_chickens set color to color2

Else
    counter set value to 1
```

```
9. A) code is:

```
world.indexOfColorFrog

No variables

Loop 123 index from 0 up to (but not including) arrayVisualization's size incrementing by 1

If the value at arrayVisualization [index] .color == skinColor

Return index

Else
(Do Nothing)

Return -1
```

B) Code is:

```
world.recolorFrogs

indexStableColor = 1

Loop 123 index from 0 up to (but not including) 8 times incrementing by 1

If index < indexStableColor

the value at arrayVisualization [index] set color to colorBefore

Else

If index > indexStableColor

the value at arrayVisualization [index] set color to colorAfter

Else
(Do Nothing)
```
Alternate Solution