Given below are the condition possibilities for an if statement

Below are the tiles at the bottom of a procedure

Below are the tiles at the bottom of a function
Given below are the panda procedures and panda Properties on the bottom right.
Given below are the panda functions.
If, loops, and changing an array element.
**More Events**

```
declare procedure mouseClicked do in order
  if event getModelAtMouseLocation == this panda is true then
    drop statement here
  else
    drop statement here

declare procedure pointOfViewChanged do in order
  drop statement here

declare procedure collisionStarted do in order
  drop statement here
```
1. (12 pts) Consider the following snapshot of an Alice world in which there are three objects in front which are from left to right: bunny, panda and tortoise. The bunny is 2 units from the Panda and the tortoise is 2 units from the panda. Imagine the three of them standing on an invisible line. A fourth object dalmatian is at least 4 units behind the tortoise.

A) List the events in the world.

B) Explain everything that happens in the world when only the Run button is pressed.
C) After the world has played for 30 seconds, nothing should be moving. Explain how the user can interact with the world, and what happens in the world when the user interacts with it.
2. (9 pts) Consider the following array of bipeds called **club**.

A) For the following code segment, explain what happens when this code executes. Be sure to make it clear who moves, when they move and where they move to, and if different creatures move, the order they move.
B) For the following code segment, explain what happens when this code executes with the array shown on the previous page. Be sure to make it clear who moves, when they move and where they move to, and if different creatures move, the order they move.
3. (12 pts) Consider the following Scene function called **mystery**. Assume **coyotes** is an array that has only coyotes in it, and for which all the coyotes in the array are visible.

A) What *type of value* does the function mystery return?

B) What is `count`: a property or a variable?

C) What other objects could be put into the coyotes array?

D) What are the number values that could be assigned to `number` based on the code?

E) Explain what the function mystery does and what it returns.
4. (8 pts) Consider the following Alice world that has a **toucan** at least 3 units from the other birds, and three birds all within 1 unit of each other: a **peacock**, a **penguin** and a **seagull**. A mouseClicked event is also shown.

A) When this Alice world runs, what happens when the toucan is clicked on?

B) When this Alice world runs, what happens when the seagull is clicked on?

C) When this Alice world runs, what happens when the peacock is clicked on?

D) When this Alice world runs, what happens when the penguin is clicked on?
5. (10 pts) Consider the following Alice world that has bunnies and penguins in it. The game has the bunnies and penguins move around randomly (that code is not shown) and the user clicks on bunnies or penguins and gets one point for each. A score is shown that updates by one whenever a bunny or penguin is clicked on. Shown are the initial picture, some of the events, myFirstMethod and initializing and updating the score. Also shown are three arrays called animals (both penguins and bunnies), penguins (just penguins) and bunnies (just bunnies), and two other properties scoreNum and gameOn.

Answer questions about this program on the next page.
A) What is the name of the 3D text that displays the score?

B) Suppose we want to modify updateScore so you can call it with different values for updating the score. For example, maybe you want to call it with 1 sometimes to add a point and -1 sometimes to subtract a point. Explain how to modify updateScore and give the new code.

C) Suppose we change the game so that the user is only suppose to click on penguins. If they click on a penguin they get 1 point, and if they click on a bunny by mistake, they lose 1 point. Explain what modifications need to be made and where and give the new code.
D) Suppose we want the game to stop once the score is 10 or more points. Explain where you need to make modifications and give the new code to handle this.
6. (9 pts) Consider the following Alice world with a bunny, panda, poodle and fox, and the addCollisionStartListener and the AddDefaultModelManipulation.

Answer questions about this code/world on the next page.
A. When the Alice world runs, what happens when the user clicks on the bunny and drags the bunny into the fox?

B. When the Alice world runs, what happens when the user clicks on the poodle and drags the poodle into the panda?

C. When the Alice world runs, what happens when the user clicks on the panda and drags the panda into the bunny?

D. Suppose the user wants the Panda to disappear whenever it collides with the fox or poodle. What code would you add and where would you add it?
7. (4 pts) Consider the following Alice program where all the bipeds shown are in the array named `creatures`. The function `tallest` is supposed to return the tallest biped in the array `creatures`. When `myFirstMethod` runs the `tallest` method returns the panda, who is NOT the tallest biped in the array. The Alien is the tallest.

Explain how to fix the `tallest` function so that it always returns the tallest biped in the array and show the code (you can modify the code above). Your function should work even if the elements in the array are changed.
8. (12 pts) Consider an Alice world with one eagle and an array of penguins named penguins. The penguins in the array have three different heights. The penguins are either small (around 0.40 in height), medium (around .65 in height) or large (around 1.10 in height).

A. Write the Scene function NumberInHeightRange that has two parameters. The first one is a DecimalNumber named minRange, and the second one is a DecimalNumber named maxRange. This function should return the number of penguins whose height is in the range from minRange to maxRange inclusive.

```plaintext
decl wholeNumber function NumberInHeightRange
  with parameters: DecimalNumber minRange, DecimalNumber maxRange
```
B. Write the Scene procedure called ComparePenguins that has been started below for you. This procedure figures out which there are more of in the array: small, medium or large penguins. Then the eagle says “There are more XXX penguins” where XXX is either “small”, “medium”, or “large.” For example, for the picture on the previous page, the eagle would say “There are more small penguins” since there are 5 small penguins which is a larger number than the number of medium or large penguins.
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