Given below are the world functions.
Given below are the chicken properties and methods.

<table>
<thead>
<tr>
<th>Chicken's properties</th>
<th>Chicken's methods</th>
<th>Chicken's functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>create new variable</td>
<td>move</td>
<td>stand up</td>
</tr>
<tr>
<td>capture pose</td>
<td>turn</td>
<td>constrain to face</td>
</tr>
<tr>
<td>color</td>
<td>roll</td>
<td>constrain to point at</td>
</tr>
<tr>
<td>opacity = 1 (100%)</td>
<td>resize</td>
<td></td>
</tr>
<tr>
<td>vehicle = world</td>
<td></td>
<td></td>
</tr>
<tr>
<td>skin texture = Chicken_TextureMap</td>
<td>say</td>
<td></td>
</tr>
<tr>
<td>fillingStyle = solid</td>
<td>think</td>
<td></td>
</tr>
<tr>
<td>pointOfView = position: 0, 0, -0.1; orientation: (0, 0, 0) 1</td>
<td>play sound</td>
<td></td>
</tr>
<tr>
<td>isShowing = true</td>
<td>move to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>move toward</td>
<td></td>
</tr>
<tr>
<td></td>
<td>move away from</td>
<td></td>
</tr>
<tr>
<td></td>
<td>orient to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>turn to face</td>
<td></td>
</tr>
<tr>
<td></td>
<td>point at</td>
<td></td>
</tr>
<tr>
<td></td>
<td>set point of view to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>set pose</td>
<td></td>
</tr>
</tbody>
</table>
Given below are the chicken functions.

Tiles at the bottom of the Alice window.
1. (3 pts) Consider the following html code.

```
<html>
<body>
<h3>Hiking Near Durham</h3>
<p>Eno River is a <strong>great</strong> place to hike</p>
<br>
<h1>Height</h1>
<p>Eno River drops 250 vertical feet</p>
</body>
</html>
```

Which web page corresponds to this html code?

A) **Hiking Near Durham**
   
   Eno River is a *great* place to hike
   
   **Height**
   
   Eno River drops 250 vertical feet

B) **Hiking Near Durham**
   
   Eno River is a *great* place to hike
   
   **Height**
   
   Eno River drops 250 vertical feet

C) **Hiking Near Durham**
   
   Eno River is a *great* place to hike
   
   **Height**
   
   Eno River drops 250 vertical feet

D) **Hiking Near Durham**
   
   Eno River is a *great* place to hike
   
   **Height**
   
   Eno River drops 250 vertical feet
2. (3 pts) Consider the following html code.

```html
<a href="http://vampires.org">
vampires
<img src="vampire.jpg">
</a>
```

What can the user click on to go to the website vampires.org?

3. (3 pts) Show how the following html code will be displayed. Be precise.

```html
Duke <i>beat</i> Florida this </i> <br>
past <b>weekend</b>
```

4. (3 pts) Explain what the <title> tag for html does. How and where would the following be displayed?

```html
<title> Ice Cream </title>
```
5. (3 pts) Consider the following html code.

```html
<ol>
  <li> Chewbacca </li>
  <ul>
    <li> R2D2 </li>
    <li> Yoda </li>
    <li> Anakin </li>
  </ul>
  <li> C-3PO </li>
  <li> Obi-Wan </li>
</ol>
```

Which one of the following is the corresponding picture to this html code?

A) • Chewbacca  
   1. R2D2  
   2. Yoda  
   • Anakin  
      1. C-3PO  
      2. Obi-Wan

B) 1. Chewbacca  
    ○ R2D2  
    ○ Yoda  
    2. Anakin  
       ○ C-3PO  
       ○ Obi-Wan

C) • Chewbacca  
   • R2D2  
      1. Yoda  
   • Anakin  
   • C-3PO  
      1. Obi-Wan

D) 1. Chewbacca  
   2. R2D2  
      ○ Yoda  
   3. Anakin  
   4. C-3PO  
      ○ Obi-Wan
6. (3 pts) Consider the following html code.

```html
<table border=1>
  <tr> <td> chicory </td> <td> dill </td> <td> jasmine </td> <td> lavendar </td> <td> mint </td> <td> nutmeg </td> <td> rosemary </td> </tr>
</table>
```

Which picture corresponds to this code?

A)  

<table>
<thead>
<tr>
<th>chicory</th>
<th>dill</th>
<th>jasmine</th>
</tr>
</thead>
<tbody>
<tr>
<td>lavendar</td>
<td>mint</td>
<td></td>
</tr>
<tr>
<td>nutmeg</td>
<td>rosemary</td>
<td></td>
</tr>
</tbody>
</table>

B)  

<table>
<thead>
<tr>
<th>chicory</th>
<th>dill</th>
</tr>
</thead>
<tbody>
<tr>
<td>jasmine</td>
<td>lavendar</td>
</tr>
<tr>
<td>mint</td>
<td>nutmeg</td>
</tr>
<tr>
<td>rosemary</td>
<td></td>
</tr>
</tbody>
</table>

C)  

<table>
<thead>
<tr>
<th>chicory</th>
<th>dill</th>
</tr>
</thead>
<tbody>
<tr>
<td>jasmine</td>
<td>lavendar</td>
</tr>
<tr>
<td>mint</td>
<td>nutmeg</td>
</tr>
<tr>
<td>rosemary</td>
<td></td>
</tr>
</tbody>
</table>

D)  

<table>
<thead>
<tr>
<th>chicory</th>
<th>dill</th>
<th>jasmine</th>
</tr>
</thead>
<tbody>
<tr>
<td>nutmeg</td>
<td>rosemary</td>
<td></td>
</tr>
</tbody>
</table>

7. (3 pts) In Alice, which one of the following is not an option on “more” at the end of the “move” built-in command?

A) as seen by  
B) duration  
C) height  
D) style  

8. (3 pts) Explain the difference between the move and turn commands when working with a part such as the head of the chicken.
9. (16 pts) Consider the following Alice code in which the lines are numbered.

A) In line 1, what is the name of the function and what type does it return?

B) In line 2, what type is “cow is larger than flamingo”?

C) In line 3, is this a user method or built-in method?.

D) In line 5, is word.spray a function or a method?

E) From line 5, list the words that are arguments.

F) From line 5, list the words that are parameters.

G) What must be true in order for line 5 to execute?

H) In line 6, list the name of the function and the type of value it returns.
10. (4 pts) Consider the following world that has the three objects: tortoise, chicken and penguin (shown below from left to right) and given code. The world has been setup as shown below. The chicken is exactly 1.0 meter from the tortoise, and the chicken is exactly 1.0 meter from the penguin.

The diagram below is looking from above over the scene. The tortoise is represented by the T, the chicken is represented by the C, and the penguin is represented by the P. The animals are facing the bottom of the page. Using the diagram below, draw the path of tortoise and penguin as a solid line and the path of chicken as a dashed line.
11. (6 pts) Consider the following `world.Mystery` function.

A) What does `world.Mystery` return when the following call is made?

```
print world.mystery value1 = 5 value2 = 5 value3 = 5
```

B) What does `world.Mystery` return when the following call is made?

```
print world.mystery value1 = 2 value2 = 9 value3 = 10
```

C) What does `world.Mystery` return when the following call is made?

```
print world.mystery value1 = 2 value2 = 2 value3 = 2
```
12. (10 pts) Consider the following Alice world that has two objects: penguin and armChair.

The world starts as shown in the figure above with the penguin behind the armchair facing another direction. Write code to do the following in this order. When you move the penguin you do not need to move his legs, just move him.

a) The penguin should face the armchair, then move up close to the chair and jump over it landing on the ground about 1-2 meters in front of it.

b) The chair should then say “Who are you?”.

c) The penguin then continues moving in the same direction for 20 meters. At the same time: the armchair’s cushion should follow the penguin out of the scene.
13. (8 pts) Complete the following class method called `paint` whose header is shown below. This method has two parameters, an object named “item,” and a color named “newcolor.” This method first has the kangarooRobot face the item, then the kangarooRobot moves close to the item, circles it once, and then the item turns the color of newcolor.

![Image of robots and mailboxes](image)

For example, suppose the scene starts as shown in the picture above. The call “kangarooRobot.paint item=mailbox2 newcolor=red” has the kangarooRobot face mailbox2, move close to it (you do not need to make it look like it is rolling, just move it), circle the mailbox2 and then mailbox2 turns red and stays red. The call “kangarooRobot.paint item=mailbox3 newcolor=green” has the kangarooRobot face mailbox3, move close to it, circle it and mailbox3 turns green.
14. (10 pts) During the fall season at Lake Dukefish, fish are catchable if they are longer than a particular catchsize and their color is NOT blue. Complete the following function called fishToCatch that has four parameters, one number named catchSize, one object named fish1, one object named fish2, and one object named fish3, and returns any fish that is allowed to be caught because its color is NOT blue and its length (same as depth in Alice) is greater than catchSize. Assume at least one of the three fish are catchable.

A) Complete the function below.

```
world.fishToCatch
world.fishToCatch (catchSize , fish1 , fish2 , fish3)
```

B) Assume there are three fish objects minnow, lilfish and uglyFish, and at least one of them is catchable if the catchable length is 1. Give Alice code to have one of the catchable fish say “I’m catchable, try to catch me.” Then have the catchable fish move off screen quickly (moving forward 20 meters should do it). You must call the function you wrote in Part A) to receive full credit.
15. (12 pts) Consider an Alice world with four people objects natalie, bob, euripedes, and toySoldier (from left to right below).

A) (4 pts) Assume that a person is defined as \textit{slim} if their height is greater than 4 times their width. Complete the function called \texttt{isSlim} that has one object parameter named \texttt{person}. This function returns true if the person is slim and false if they are not. For example, world.isSlim(toySoldier) returns true because the toySoldier's height is greater than 4 times his width, and world.isSlim(bob) returns false because Bob's height is not greater than 4 times his width.

```
world.isSlim
world.isSlim \texttt{(Obj) person}
```

B) (8 pts) Slim Rules are defined as follows. A person who is slim is always taller than a person who is not slim. If two people are both slim or both not slim, then the taller person is the person who is taller. Complete the following function called \texttt{tallestPersonUsingSlimRules} that returns the tallest of two people using slim rules. To receive full credit you must call the function from part A. For example, euripedes is slim and bob is not slim. It doesn't matter how tall they are, using Slim Rules, euripedes is taller. For another example, toySoldier and euripedes are both slim. The one that has greater height, toySoldier, is the taller one.

```
world.tallestPersonUsingSlimRules
world.tallestPersonUsingSlimRules \texttt{(Obj) person1, (Obj) person2}
```