CISC 1600, Practice final exam

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Instructions

1. This is a closed-book, closed-note exam, except for two 8.5x11" sheets of notes.
2. You may not consult with any other person during the exam.
3. You may not use any communication device or computer during the exam.
4. You have 120 minutes to finish.
5. Write all work on the exam paper. Use reverse side if needed (but clearly indicate this if you do)
6. It is highly recommended that you provide some answer for every question so you can receive partial credit. Unanswered questions will receive 0 points.

Unit 1: Web Programming & Web Design

HTML

1. Define "markup languages".
2. There are 3 things that markup languages can be used for: what are they?
3. Define Tag, Element, and Attribute.
4. What are the 3 types of HTML tags?

CSS

1. There are 3 ways to include CSS on a page, what are they? What is the "best" way?
2. What the difference in CSS between a class and an id?
3. Create a custom class called "caution" that will make the text red with a font-size of 20px. This class needs to be able to be used by all tags.
4. Apply the custom class you created above to the word "special" below:

```
The word
special
has been formatted using a custom class.
```

5. Find and fix the errors in the following CSS code

```
h1 [
font-family; Verdana, sans-serif,
color; red,
font-size; 20px,
]
p, div, h2 [color; #00DDFF, width; 80%, ]
```

Unit 2: Interactive Programming & Graphics

Processing

1. How does processing implement the imperative concepts of "sequence", "selection", and "repetition"?
2. What is special about the draw() and setup() functions in processing?
3. What's the difference between a vector and a bitmap image?
4. What is an animation?
5. Consider the following Processing code

```
Box b;
void setup() {
  size(400,300);
  b = new Box();
}
void draw() {
  background(204);
  b.draw();
}
void mouseDragged() {
  b.move(mouseX, mouseY, pmouseX, pmouseY);
}

class Box {
  int topLeftX, topLeftY, side;
  Box() {
    side = width/4;
    topLeftX = width/2 - side/2;
    topLeftY = height/2 - side/2;
  }
  boolean contains(int x, int y) {
    // Return true if this box contains the point (x,y), false otherwise


  }
  void move(int x, int y, int prevX, int prevY) {
    if (this.contains(prevX, prevY)) {
      topLeftX = topLeftX + (x - prevX);
      topLeftY = topLeftY + (y - prevY);
    }
  }
  void draw() {
    rect(topLeftX, topLeftY, side, side);
  }
}
```

(a) Implement the `contains(int x, int y)` function so that it returns true if the box contains the point `(x, y)` and false if not.
(b) Identify the parts of the code that correspond to the object-oriented, procedural, and event-driven paradigms
(c) Describe what the sketch does including what is drawn initially on the canvas, how the user interacts with it, what its behavior is during user interaction, and what is drawn after user interaction.
(d) How many times will the `setup()`, `draw()`, and `mouseDragged()` functions be called as a user interacts with this sketch?

General

1. What is a programming paradigm?
2. Name three popular programming paradigms. Describe them.
3. Imperative languages are like "smart lists". These smart lists need 3 things to function, what are they?
4. How is the event-driven paradigm implemented in JavaScript, Processing, and Scratch?
5. How is the object oriented paradigm implemented in JavaScript, Processing, and Scratch?
6. How is the procedural paradigm implemented in JavaScript, Processing, and Scratch?

JavaScript

1. Define 'event listener'.
2. What's wrong with the JavaScript in the following web page? How would you fix it?

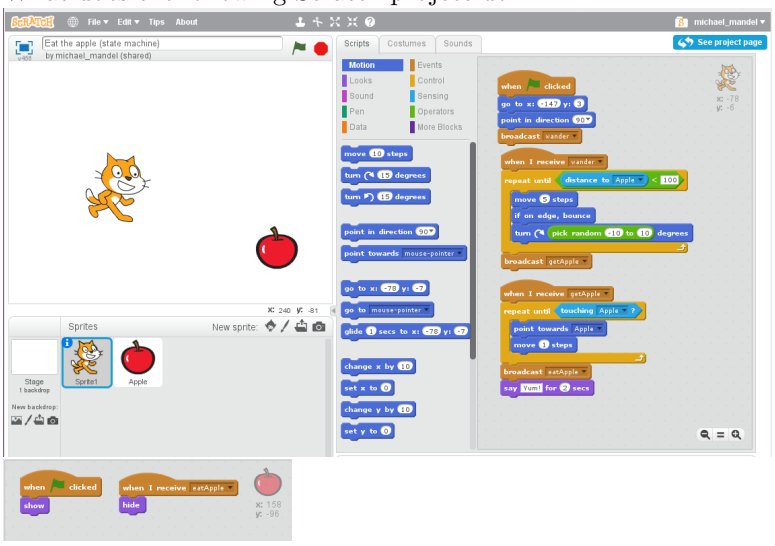
```
<html>
<head>
<script type="text/javascript">
function displaymessage()
[
alert("HelloWorld!")
]
/ this is a comment
</script>
</head>
<body>
<input type="button" value="Click me!" onclick="displaymessage()"/> </body>
</html>
```

3. What does the webpage (after you have fixed it) above do?

Unit 3: Game Programming and simulation

Scratch

1. What is a visual programming language?
2. What is an advantage of using a visual programming language?
3. What is one of the disadvantages of Scratch as a language (what sort of things can you NOT do in Scratch)?
4. How does Scratch implement the imperative concepts of "sequence", "selection", and "repetition"?
5. What does the following Scratch project do?



Game design

1. Consider an iPhone app version of the game chess
   (a) Describe the mental, physical, and social aspects of the game according to the "theory of natural funativity".
   (b) Describe the choices, feedback, and intermediate goals that make then game fun according to Sid Meier's three concrete components of great games.
   (c) Describe the mechanics, dynamics, and aesthetics of the game according to the MDA game design criteria.

Game math

1. We can define a game as a progression of "states". Define "state"; give an example.
2. What does the equation $f = ma$ mean? If you were implementing gravity in a side-scrolling game, what variables would you need to declare to use

this? How would you update them every frame?

Agents, Simulations and Visualizations

1. What is an agent?
2. If we were to consider Scratch sprites as agents, name 2 sensors and 2 effectors available to them
3. How does NetLogo implement the object oriented paradigm?
4. We discussed two applications for agents. Name and describe one of them.