**CMSC110 (Introduction to Computing)**

**Fall 2010**

**Assignment#1**

First, read Chapters 1, 2, 3 from Shifman's text.

**Task#1:** Design and create your own sketch using the Processing language/environment. Think of yourself as a creative designer when choosing the topic of your design. This is your very first sketch, so here are some guidelines:

* Make sure that it is at least 500 pixels by 500 pixels. The dimensions can vary depending upon your design, but make sure that it is not "small".
* Make use of any of the drawing primitives learned in class this week: size, no/smooth, stroke, fill, point, line, rect, triangle, ellipse, quad, begin/endShape, arc, curve, mouseX, mouseY, image, etc.
* Your sketch should make use of several functions (as this is the point of this assignment!. A really "abstract" sketch like a simple circle in the center of the screen will not suffice (as asthetic as it may seem).

To give you some ideas, several sketches will be presented in class. Here are some additional ideas:

* A self-portrait
* An avatar or a cartoon of someone
* Your favorite cartoon TV Show character (e.e. South Park), or design your own...
* A city scape
* Animal/object caricatures/study
* A Post Card Design
* A fabric pattern
* Stylize your name's initials...or a logo
* The Bryn Mawr Owl
* A Poster
* Imitation of existing design or art (check out Ndebele and other folk designs, works of artists like: Kasimir Malevich, Robert Delauney, Piet Mondrian, Giorgio Morandi, etc.)
* etc.

Make sure that every Processing file has the following lines at the top:

// Assignment #

// Name: Your Name

// E-mail: your e-mail address

// Date: Date of submission

**What to Hand in:** Write a short note about the sketch, its inspiration, and how you designed and implemented it. Write a short paragraph about your impressions on working on this assignment. Include a printout of the sketch in your document. Hand in a printed copy of this handout in class. Additionally, place it in the same folder as your sketch as a Word/Office document and submit all work electronically using the free dropbox service (see Task#2 below). Feel free to send an e-mail to Deepak after your submission to get an acknowledgement of receipt of your work. It is entirely your responsibility to ensure that your work is placed in the assigned folder by the due date. Failure to do so will result in loss of credit for the assignment.

**Task#2:** By Friday, Septemebr 3 you will receive an e-mail invitation from Deepak Kumar to join dropbox.com folder sharing service. Follow the instructions:

Go to dropbox.com or click on the link sent my Deepak.

Fill out the information for creating a new account:

First Name

Last Name

Email Address

Password

After the account is created, you can (if you want) download the dropbox program. If you install dropbox on your computer, you will get a folder named "My Dropbox" and in it will be a folder with your name that is shared with Deepak Kumar. This is where you will copy your Assignment folders all semester for submission and grading.

To upload files into the shared folder:

From any web browser: sign in, choose the folder with your name on it, and click the upload button. Select the folder you are submitting, then click start upload.

(If you install the dropbox program) From the desktop dropbox icon: open the My Dropbox andthen the folder with your name on it. Select and copy the folder you are submitting into this folder. Dropbox will automaticalyl sync the new submission with the shared folder. That's it!

**Assignment#2**

First, read Chapters 1, 2, 3, 4 & 5 from Shifman's text.

**Task:** Using variables, design an object that uses the drawing primitives learned so far (you have to use at least three or more in your design as well as three or more colors/shades), so that you can place/draw the object anywhere based on a single anchor point. You should also be able to scale the size of the object using variables for width and height. Here are some general guidelines:

* Make sure that sketch is at least 500 pixels by 500 pixels.
* Make use of any of the drawing primitives learned in class: size, no/smooth, stroke, fill, point, line, rect, triangle, ellipse, quad, begin/endShape, arc, curve, mouseX, mouseY, image, etc.
* Here is the structure your sketch should take:

// Assignment #

// Name: Your Name

// E-mail: your e-mail address

// Date: Date of submission

float x, y, w, h; // these are the coordinates of the top left corner <x, y>,

//and the width (w) and height (h) of the enclosing rectangle

void setup() {

// set the screen size and all other drawing directives

// set the x, y, w, h to some specific values

x = ...;

y = ...;

w = ...;

h = ...;

}

void draw() {

// draw the object so that its top left corner is at ,x, y> and is of size w x h

}

void mousePressed() {

// set x, y, w, h to some new value(s)

}

Design an aesthetically pleasing object shape. Look at the images of the artist Giorgio Morandi's work. Try and imitate objects from it for your design.

**Extra Credit:** Animate your object in some meaningful and aesthetic way that is relevant to your design.

**What to Hand in:** Hand in the entire sketch folder in your Dropbox folder. In addition to the sketch/programs also include; (1) a gif/jpg/png image of your finished sketch. (2) A formatted write-up with Page#1 showing your sketch, followed by a title, your name, a short 1-2 line description (as discussed in class) on page#1, and a short 1-2 paragraph more detailed description of the sketch and your personal experiences working on this sketch.

**Assignment#3**

First, read Chapters 1, 2, 3, 4. 5, 6 & 7 from Shifman's text.

**Task:** Design an object. This could be whatever you feel like drawing. To draw your object, you should use the following function:

void drawMyObject(float x, float y, float w, float h) {  
...  
}

Insert the name of your object in place of "MyObject" in the fuction name. Write a program that interactively draws several versions of the object in a 500 x 500 sketch. You should use the random number function to generate x, y, w and h values. You can also vary the coloring of the object each time it is drawn. Your sketch should use some interactivity (using the mouse) in some way (you can design whatever interactivity you desire).

In your overall sketch pay special attention to the aesthetic aspects of your design as well as interactivity.

**What to Hand in:** Hand in the entire sketch folder in your Dropbox folder. In addition to the sketch/programs also include; (1) a gif/jpg/png image of your finished sketch. (2) A formatted write-up with Page#1 showing your sketch, followed by a title, your name, a short 1-2 line description (as discussed in class) on page#1, and a short 1-2 paragraph more detailed description of the sketch and your personal experiences working on this sketch.

**Assignment#4**

First, read Chapters 1, 2, 3, 4. 5, 6, 7 & 8 from Shifman's text.

**Task:** Design a street light. You can design it anyway you like. You will model the street light using an object class as follows:

StreetLight light1, light2, light 3;

void setup() {

size(\_, \_);

smooth();

light1 = new StreetLight(x, y, h);

light2 = new StreetLight(...);

light3 = new StreetLight(...);

}

// end of setup

void draw() {

background(255);

// turn the light on or off

light1.turnOn();

light3.turnOff();

...

} // end of draw

class StreetLight {

void StreetLight(...) {

...

}

void turnOn(...) {

...

}

...

}// end of class StreetLight

The focus should be on the use of classes to define the Streetlight object factory. You will need to draw the constructor, various operations for turning a given light on or off, drawing it, etc. When turned on, the display of the street light should visibly change.

Later in the week, a program that uses your street light to draw a street scene will be posted. Look for it HERE.

In your overall sketch pay special attention to the aesthetic aspects of your design.

**Extra Credit:** (1) In addition to the standard street scene provided, model one of your own chosing. (2) Design the street light so it can be placed on either side of the street. (3) Draw a halo showing the illuminated area of the street when the light is turned on.

**What to Hand in:** Hand in the entire sketch folder in your Dropbox folder. In addition to the sketch/programs also include; (1) a gif/jpg/png image of your finished sketch. (2) A formatted write-up with Page#1 showing your sketch, followed by a title, your name, a short 1-2 line description (as discussed in class) on page#1, and a short 1-2 paragraph more detailed description of the sketch and your personal experiences working on this sketch.

**Assignment#5**

First, read Chapters 1, 2, 3, 4. 5, 6, 7 & 8 from Shifman's text.

**Task:** Design an underwater creature. The creature should be designed so that it can be instantiated as an object. Make sure you name the class as <YourFirstInitialLastName>Unit. For example Deepak's creature will be defined in a class called DKumarUnit. You should be able to create instances of the creature with varying sizes. In addition to the constructor, make sure that the class includes methods called display(), and move() so that one could incorporate your creature in a sketch as follows:

DKumarUnit DKFish;

float SIZE;

void setup() {

size(\_, \_);

smooth();

SIZE = ...;

DKFish = new DKFish(SIZE);

...

}

// end of setup

void draw() {

// display the creature

DKFish.display();

// move it

DKFish.move();

} // end of draw

class DKFish {

void DKFish(...) {

...

}

void display(...) {

...

}

void move() {

...

}

...

}// end of class DKFish

The focus should be on the use of classes to define the object factory. You will need to write the constructor, and various operations as described above.

Make sure that your creature is not too small, nor too large, as it will have to live in an aquarium with a couple of dozen other creatures!

Depending upon the creature you design, define appropriate move behavior. Some creatures will swim like a fish, or a submarine, some will wiggle about, some might just stay in one place and rotate, bubble, etc.

In your overall sketch pay special attention to the aesthetic aspects of your design. Write your own aquarium sketch where you can display several creatures of varying sizes. Make it 800x600 pixels.

**What to Hand in:** Hand in the entire sketch folder in your Dropbox folder. In addition to the sketch/programs also include; (1) a gif/jpg/png image of your finished sketch. (2) A formatted write-up with Page#1 showing your sketch, followed by a title, your name, a short 1-2 line description (as discussed in class) on page#1, and a short 1-2 paragraph more detailed description of the sketch and your personal experiences working on this sketch.

**Assignment#6**

**Task:** Design a holiday Greeting Card. The printed card should be no more than 5 X 8 inches. It could be oriented in landscape or portrait. You are to design just the face of the card. The inside of the card will be blank.

**What to Hand in:** Hand in the entire sketch folder in your Dropbox folder. In addition to the sketch/program also include; (1) a gif/jpg/png image of your finished sketch. (2) A formatted write-up with Page#1 showing your sketch, followed by a title, your name, a short 1-2 line description (as discussed in class) on page#1, and a short 1-2 paragraph more detailed description of the sketch and your personal experiences working on this sketch.

**Assignment#7**

**Task:** Identify a dataset of interest to you and using the process outlined in class for data visualization, follow the steps of acquiring, cleaning, filtering, mining, representation, and interaction to create a visually interactive sketch of the data.  
  
**Part#1:** The first step is to identify the dataset and acquire it.  
  
**Part#2:** Develop the visualization.

**What to Hand in:**   
  
**For Part#1:** A description of the domain of the dataset, its relevance, and what a visualization of it will enable. Hand in a short written report in the dropbox folder.   
  
**For Part#2:** Hand in the entire sketch folder in your Dropbox folder. In addition to the sketch/program also include; (1) a gif/jpg/png image of your finished sketch. (2) A formatted write-up with Page#1 showing your sketch, followed by a title, your name, a short 1-2 line description (as discussed in class) on page#1, and a short 1-2 paragraph more detailed description of the sketch, including how to use the interactive component(s) and your personal experiences working on this sketch.