Goal: Learn to work with Processing Development Environment and to learn to solve problems using Processing.

Objectives:

Learn to (i) solve problem using Processing language (ii) use Processing Development Environment (PDE) (iii) use 2D primitives, color settings, image commands, mouse operations and the coordinate system of PDE.

Problem context:

Imagine the landscape and a scenario capturing African Savanna. If you cannot, search for the images representing “African Savanna”. Two representative images are shown below:

The image on the left shows the African Savannah with grasslands in the fore front, the blue sky at the far end or upper half of the picture. It also shows the horizon with a mountain range and a few acacia trees. The picture on the right shows some of the inhabitants of the savannah: giraffe, elephant, zebra, lion, vulture, etc.

Problem Statement:

Design an interactive sketch (Processing program) depicting the African Savannah. The top half of the sketch will represent the sky and the bottom half the grassland. Color the top and bottom of your sketch appropriately. User interaction involves placing the animals and other objects on the savannah by clicking the mouse the various points. As the user clicks on the top half vultures, cloud and similar objects in the sky are placed. If the user clicks on the grassland (lower half) animals, rocks and trees are placed. Object to be placed is selected randomly by the program. Make sure you keep track of the horizontal line position (as a variable) between the two halves since this will decide the type of animals to be placed in the respective half. One may also choose different sizes for the objects. For example, the size of clouds and rocks should shrink as the mouse click position approaches the horizon line.

Implementation Details:

- For the initial size of the sketch use 500 pixels by 500 pixels.
- When the mouse is clicked, test the mouse position in relation to the horizon to determine which object to draw.
- Your objects can be simple. For example, clouds could be made of multiple ellipses, flowers could be made with nested colored ellipses and a green rectangle, and rocks could be made of multiple
rectangles. You may also get the objects from picture files from public sources or your own pictures.

- Use random number generator to use the object to be placed. This random number will decide the file name.
- Your code should use variables as appropriate and use comments.

Use the following code structure for your program:

```cpp
// Header comments: Name box as shown below
/**********************************************/
/* Project: Interactive African Savannah ******/
/* Author: Your full name                  */
/* Email: your buffalo email               */
/* Date of completion: 9/19/2014           */
/* Course: CSE113 Fall 2014               */
/**********************************************/

// Declare variables

void setup() {
  // Set up the drawing.
  // Draw the sky and the ground
}

void draw() { /* remains empty */ }

void mousePressed() {
  // Use the mouseY position to decide whether drawing on sky or on ground
  // Compute scale factor and call appropriate drawing function.
}

// You may rename this function, depending on what you choose as your sky object
void drawCloud( int x, int y, float scal ) {
  // Draw a cloud at the given coordinates using scale factor.
}

// You may rename this function, depending on what you choose as your sky object
void drawRock( int x, int y, float scal ) {
  // Draw a rock at the given coordinates using scale factor.
}

Submission:

Submit it ublearns as you did with the mock lab during the first week of your recitation.

Due date: 9/19/2014 by 9pm