**CSC 545 Computer Speech, Music, and Images**

**Test 2**

Copy the Test2 folder from the class server to your computer. Add your name in a comment at the top of Test2.pde and complete Test2.pde to enable a user to magnify part of an image. Test2.pde provides the start of a magnifier program. Your job is to implement the magnification and size control. The magnified section should be centered on the mouse position. As the mouse moves around the screen, the section of the image around the mouse is magnified. You may assume the magnified section will always be square (regionSize x regionSize). Up arrow increases the region size by a constant (REGIONDELTA); max region size is determined by another constant (MAXREGION). Down arrow decreases the region size by REGIONDELTA, with a minimum size of MINREGION. Allow the user to control the level of magnification using the mouse wheel—moving the wheel forward (away from the user) one click increases the magnification level by MAGDELTA; moving the wheel backward (toward the user) decreases the magnification level by MAGDELTA. You should be aware that the size of the magnified box will change when you modify magFactor. The regionSize does not change, though – it’s still the same number of pixels inside the region. ‘r’ resets the region size and magnification level to default values (REGIONDEFAULT, MAGDEFAULT).

*Hint:* There are a number of ways to solve this problem using low-level pixel processing but most of them are hard to get just right. The easiest way is to display the base image, then use the get() method to copy a regionSize x regionSize section centered on the mouse position, resize the new (copied) image according to magFactor, and display it centered on the mouse position (there’s an image mode that lets you position an image by its center, rather than its upper left corner).

The test will be graded according to the following criteria:

Set canvas size to image size………………………………………………………..10%

Load and display base image………………………………………………………. 15%

Create magnified image…….………........................................................................ 15%

Center magnified image on mouse position………………………………………... 15%

Mouse wheel control of magnification level……………………………………..…10%

Arrow control of magnification region size……..…………………...…………….. 10%

Reset default values on ‘r’ key………………………………………………...……..5%  
Magnification to image edges (no unprocessed border)…………...………............. 10%

Able to handle region sizes from MINREGION to MAXREGION……………........5%

Able to handle magnification levels from MAGMIN to MAGMAX..………………5%

Copy the Test2 folder, with your completed program, to your upload folder on the class server. Be sure your name is in a comment at the top of the program.

This is an open-notes test; you may use your notes and anything on the class server or in the processing.org reference (<https://processing.org/reference/>) but nothing outside those locations.