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| **Date Assigned:** 8/29/16 | **Date Due:** 8/31/16 |
| **Unit:** Basics | **Turn In List:** **1. Terms (this file), 2. ColDet.pde** |
| *“I will understand how to open, configure, write simple code and compile in the Processing IDE.”* | |

**Collision Detection Program: Getting to Know the Coding Environment**

**Content Objectives:** Students will create a working application and eventually publish it to run on Windows, OSX, Linux or within a webpage.

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| **Github Username** |
| Create account and place username/site here:7ty |

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| **Key Terms:** | |
| IDE |  |
| Comment |  |
| Compile |  |
| Debug |  |

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| **Application Terms:** | |
| Sketch |  |
| Console |  |
| pde |  |
| Development Modes |  |

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| **History and Background:** |
| The Processing initiative began in 2001-02 at MIT by Ben Fry and Casey Reas. It has grown into a large community of open source developers that write apps to run on Windows, OSX, Linux, the Web, Android and soon to be iOS as well as other adaptations.  Casey Reas is a renowned designer/artist, lecturer, thinker, and of course one half of the Processing design/development team. He was a student of John Maeda's at the MIT media lab, where he and Ben Fry helped develop the DBN programming language/environment. Processing was, to a degree, a natural outgrowth of DBN. Reas originally studied design at the University of Cincinnati before attending MIT, and was one of the founding professors at Interaction Design Institute Ivrea. At Ivrea, Reas worked with an international student body to develop a new arts pedagogy. It was during this period in Ivrea that he and Fry initiated Processing. Reas's work is software-based—code and coding are his primary medium. However, he manifests his code-based work in a variety of executions, including kinetic, reactive, and printed pieces. Some of his most recent work employs ideas explored in conceptual and minimal artworks, such as the wall drawings of Sol LeWitt. In a commission he received in 2004 from the Whitney, entitled *{Software} Structures*, Reas explored the relationship between conceptual art and software art. For the project, Reas created three unique descriptive structures that merely described relationships between elements in the pieces. He purposely left the structures general, without any code notation, to allow other coders to implement the pieces in different programming languages. Three other leading code artists—Jared Tarbell of Levitated (<http://levitated.net/>), Robert Hodgin of Flight404 (<http://flight404.com/>), and William Ngan of [Metaphorical.net](http://metaphorical.net/) (<http://metaphorical.net/>)—created the 26 code implementations. The project can be viewed at <http://artport.whitney.org/commissions/softwarestructures/>. When Reas is not lecturing around the world and developing Processing, he teaches as an assistant professor in the department of Design/Media Arts at UCLA. Reas is represented by bitforms gallery in New York, ([www.bitforms.com](http://www.bitforms.com/)), the BANK gallery in Los Angeles ([www.bank-art.com/index.html](http://www.bank-art.com/index.html)), and the [DAM] in Berlin (<http://dam.org/>). His work can be viewed online at <http://reas.com/>.  Ben Fry, along with Jared Tarbell, represents a generation of young artists who explore computational processes and structures as fundamental creative modalities. He's also of course the cocreator of Processing. Born the same year as the Altair 8800 was introduced, Fry and his generation never knew a time without personal computers. By the time Fry et al. were entering elementary school, the Macintosh computer was emerging, issuing in a revolution in desktop computer graphics. This generation was able to develop a fluency in computing that would have been impossible for previous generations (especially for artists). I think this fluency (and comfort) with computing is evident in Fry's work, which is less about the phenomena of computation and more about advanced and poetic applications of it.  Fry earned his undergraduate degree from Carnegie Mellon, double majoring in graphic design and computer science, and his PhD from MIT (Media Lab), studying under John Maeda and alongside Casey Reas in ACG. On the online title page of his PhD dissertation, he proposes, "To gain better understanding of data, fields such as information visualization, data mining and graphic design . . . be brought together as part of a singular process titled Computational Information Design."  Much of Fry's work deals with visualizing large data sets, including the human genome. After completing his PhD, he worked at the Eli & Edythe Broad Institute of MIT & Harvard, developing tools for the visualization of genetic data. His personal work also deals with visualization. For example, his well-known and visually engaging piece *Valence* is custom software he wrote about "building representations that explore the structures and relationships inside very large sets of information." You can read more about the piece at <http://acg.media.mit.edu/people/fry/valence/index.html>. Fry's work has been shown in galleries and museums throughout the world, including the Whitney Biennial, the Cooper Hewitt Design Triennial, the MoMA in New York, and the Ars Electronica in Linz, Austria. His work has also appeared in the feature films *Minority Report* and *The Hulk*, and in print publications, including the journal *Nature*, *New York* magazine, and *Seed*. Fry has been the recipient of numerous awards, including the Golden Nica from the Prix Ars Electronica in 2005 for his work on Processing with Casey Reas, and a Rockefeller Foundation New Media fellowship. He was also included in the "The I.D. Forty: Forty Designers Under 30 Years of Age." Fry currently holds the Nierenberg Chair of Design for the Carnegie Mellon School of Design. When he's not winning awards, helping students at CMU, or creating visualizations, he can be found answering users' questions on the Processing discourse board. You can see more information about Fry and view his work at <http://benfry.com/>. |

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| **Assignment Tutorial (Setup and Class Demonstration):** |
| Students will locate and open the Processing 2.0 IDE and set the mode to experimental. Save the new sketch as ColDet - Run the application with nothing typed in the text window… what do you see? |

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| **Assignment:** |
| // Code the following in a new Processing sketch and do not worry about NOT understanding everything!  **Macintosh HD:Users:kappter:Desktop:Screen Shot 2013-06-27 at 11.41.11 AM.png** |
| CHALLENGES FOR STUDENTS: MODIFY THE CODE TO DO THE FOLLOWING  1. DOUBLE THE SIZE OF THE BALL  2. MAKE THE CANVAS AS LARGE AS YOUR DISPLAY  3. SET THE SPEED OF THE ANIMATION TO HALF  4. MAKE THE BALL GO EXACTLY UP AND DOWN IN THE SAME X POSITION  5. SHOW THE BALL PATH  6. INVERSE THE COLOR OF THE BALL AND BACKGROUND  7. STEP THROUGH THE ANIMATION WATCHING XPOS AND YPOS CHANGE  8. MAKE ANOTHER BALL  9. WHAT IS THE FORMATTING ERROR IN THE CODE SAMPLE ABOVE? |

Notes:

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| int xspeed, yspeed;  int xpos, ypos, wdth, ht;  void setup() {  size(displayWidth,displayHeight);  background(0);  yspeed = 10;  wdth = 10;  ht = 10;  noStroke();  xpos = width/2;  ypos = height/2;  frameRate(30);  }  void draw() {  fill(255);  ellipse(xpos, ypos, wdth\*2, ht\*2);  ellipse(xpos-60, ypos-60, wdth\*2, ht\*2);  xpos += xspeed;  ypos += yspeed;  if (xpos >= width-wdth/2 || xpos <= wdth/2) {  xspeed \*= -1;  }  if (ypos >= width-wdth/2 || ypos <= wdth/2) {  yspeed = yspeed \* -1;  }  } |