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| **Date Assigned:** 9/1/15 | **Date Due:** 9/3/15 |
| **Unit:** Basics | **Turn In List:** **1. Terms (this file)** |
| *“I will demonstrate an understanding of digital information and convert decimal, binary and hexadecimal.”* | |

**Computer Basics: Bits, Bytes and Basics**

**Content Objectives:** Students will use a modern OS to examine how information is stored and examine/convert values between the decimal, binary and hex number systems.

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| **Starter Activity** |
| Using Processing and the online reference, create the following sketch. You do not need to draw gridlines and number labels. Don’t worry about getting the dimensions absolutely perfect; rather match shape attributes and fill colors for each. HINT: you will be using rect() ellipse() triangle() and quad() functions.  Macintosh HD:Users:kappter:Desktop:Screen Shot 2013-09-03 at 5.53.59 PM.png |

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| **Key Terms:** | |
| OS | Operating Systems |
| Kernel | The part of the operating system that handles the steam of information inputs and outputs |
| Binary | A computer language that only uses 0`s and 1`s |
| Bit and Bit Systems | Bit is a unit of data, Bit systems are the about of data a computer can run at once |
| Byte | 8 bits |
| Kilo, Mega, Giga, Tera | Kilo=1024 bytes, mega=1,048,576 bytes, giga=1 billion bytes, tera=1 trillion bytes |
| Hexadecimal | A number system consisting of sets of 16s |
| Base 2, 8, 10, 16 | 2= binary, 8= octadecimal, 10= decimal, 16= hexadecimal |
| File and File Extension | Data stored and the type of data |
| Folder/Directory | Area where files are stored |
| Path | How you get to the folder |

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| **Application Terms:** | |
| Windows Explorer or Finder | Folder viewers |
| File Attributes - Properties or Get Info | Data, folder, path, etc |
| Size Attributes | How big it is I.E. 1gig |
| Created, Modified and Other File Attributes | Dates |
| File Compression | Compresses a file to make it smaller |

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| **Assignment:** |
| Basic:   1. Students will demonstrate that they can navigate to the “Desktop” directory of their computer by typing the full path (Windows will include the drive letter): 2. Students will then create (or verify) the following folders inside the new “Computer Programming” directory, “Semester1” and paste the path here: 3. Students will fill in the blanks in the following table (all binary results will be written in 8 bits). Use the [Binary tool](https://dl.dropboxusercontent.com/u/21278437/LearningPJS/Teacher38LearningBinarySmall/index.html) for assistance:  |  |  |  | | --- | --- | --- | | **Binary** | **Decimal** | **Hexadecimal** | | 01010101 | 85 | 55 | | 10100010 | 162 | A2 | | 11010100 | 212 | D4 | | 00111010 | 58 | 3A | | 1000100 | 68 | 44 | | 11110010 | 242 | F2 | | 11110111 | 247 | F7 |  1. Using the [ASCII table](http://www.asciitable.com), write your first and last name in binary, decimal and hex:   Binary Name: 10001111010010100000110011101010100100100010000011010010101001010010011010011  Decimal Name:71, 82,56,78,84,72,65,82,82,73,83  Hex Name: 47,52,38,4E,54,48,41,52,52,49,53   1. Create a Processing sketch meeting the following requirements and paste code below:    1. Draw an ellipse that follows mouseX and mouseY    2. Show the path as the mouse moves    3. Randomize one of the color hues    4. Randomize the size as it is dragged |
| void setup() {  size(900,900);  frameRate(60);  background(random(25,200),random(25,200),random(25,200));  }  void draw() {  fill(random(160),random(100),random(255));  ellipse(mouseX,mouseY,55,55);      } |

Notes (Points of interest, mistakes, lessons learned, web resources, and thoughts):

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