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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 system |
| Kernel | Input/outoput |
| Binary | Base 2 counts with only ones and zeroes |
| Bit and Bit Systems | Smallest set of info how many bits will be read on a system |
| Byte | 8 bits=1 byte |
| Kilo, Mega, Giga, Tera | 1024bytes, 2048bytes,4096bytes |
| Hexadecimal | Base 16 |
| Base 2, 8, 10, 16 | Binary, octal, decimal, hexadecimal |
| File and File Extension | A collection of data stored in the computers memory. A file extension is the type of file it is and which program to open it |
| Folder/Directory | a folder is a file that contains multiple documents |
| Path | A definition of order in which a program looks for an executable program |
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| **Application Terms:** | |
| Windows Explorer or Finder | File manager application that provides graphical user interface for accessing the file system |
| File Attributes - Properties or Get Info | A piece of info that determines the properties of a field or tag in a database or a string of characters in a display |
| Size Attributes | The height and width of an image |
| Created, Modified and Other File Attributes | Metadata associated with computer files that define system behavior |
| File Compression | Compression of files to save space but loses quality |

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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 | | 01000100 | 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: 01010100 | 01111001|01101100|01100101|01110010|00001101  Decimal Name: |84|121|108|101|114|13  Hex Name: |54|79|6C|65|72|0D   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 |
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Notes (Points of interest, mistakes, lessons learned, web resources, and thoughts):

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