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| **Date Assigned:** 8/19/16 | **Date Due:** 8/25/16 |
| **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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| **Use the internet to find definitions to these Key Terms:** | |
| OS | Operating system, manages all other programs |
| Kernel | Center of a OS |
| Binary | Numerical notation, base of 2. |
| Bit and Bit Systems | Smallest unit of data in a computer |
| Byte | Group of bits (8) |
| Kilo, Mega, Giga, Tera | Prefixes to refer to quantities of something |
| Hexadecimal | Numerical system that has 16 as a base rather than 10 |
| Base 2, 8, 10, 16 |  |
| File and File Extension |  |
| Folder/Directory |  |
| Path |  |

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| **Application Terms:** | |
| Windows Explorer or Finder |  |
| File Attributes - Properties or Get Info |  |
| Size Attributes |  |
| Created, Modified and Other File Attributes |  |
| File Compression |  |

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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 |  |  | |  |  | A2 | |  | 212 |  | | 00111010 |  |  | |  | 68 |  | |  |  | F2 | | 11110111 |  |  |  1. Using the [ASCII table](http://www.asciitable.com), write your first and last name in binary, decimal and hex:   Binary Name:  Decimal Name:  Hex Name:   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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