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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 – the software that supports a computer’s basic functions, such as scheduling tasks. Executing applications, and controlling peripherals. |
| Kernel | The kernel is the central component of most computer operating systems. It is a bridge between applications and the actual data processing done at the hardware level. |
| Binary | All digital data used in computer systems consists of binary information, which contains only 0s and 1s |
| Bit and Bit Systems | The terms 32-bit and 64-bit refer to the way a computer’s processor, handles information. Smallest unit of digital information |
| Byte | A unit of digital information that commonly consists of eight bits. |
| Kilo, Mega, Giga, Tera | Prefixes that are used to denote the quantity of something, such as, in computing. 1024 bytes = 1 kilobyte, 1024 kilobytes = 1 megabytes, and so on |
| Hexadecimal | A positional numeral system with a radix, or base, of 16. |
| Base 2, 8, 10, 16 |  |
| File and File Extension | A file is a collection of data stored in one unit, identified by a filename. A file extension is the suffix at the end of a filename that indicates what type of file it is |
| Folder/Directory | A digital folder has the same purpose as a physical folder to store documents. A directory is another name for a folder |
| Path | A path defines the location of a file or folder in a computer’s file system |

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| **Application Terms:** | |
| Windows Explorer or Finder | The finder is the desktop interface of Macintosh computers. It allows users to move, copy, delete, and open files, navigate through folder, and move windows around the desktop |
| File Attributes - Properties or Get Info | File attributes are setting associated with computer files that grant or deny certain rights to how a use or the operating system can access that file. |
| Size Attributes |  |
| Created, Modified and Other File Attributes |  |
| File Compression | File compression is used to reduce the file size of one or more files. |

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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: 01000101 01000100 01010111 01100101 01010010 01000100 00100000 01010000 01010010 01010101 01010100 01010011 01001011 01001001  Decimal Name: 69 68 87 65 82 68 32 80 82 85 84 83 75 73  Hex Name: 45 44 57 41 52 44 20 50 52   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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