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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 Example: Linux, Windows, Mac |
| Kernel | Specific portion of the OS that monitors the input and output of information |
| Binary | Base 2 Counts with 1 and 0 |
| Bit and Bit Systems | Smallest unit of digital information, and how many bits are read in a sequence. |
| Byte | 8 bits |
| Kilo, Mega, Giga, Tera | 1024 bytes/2048 bytes/3072 bytes/4096 bytes |
| Hexadecimal | Base 16 FF equals 255 |
| Base 2, 8, 10, 16 | Counting systems based on 2, 8, 10, 16. |
| File and File Extension | A resource for storing information and the type of file. |
| Folder/Directory | Organize files and folders |
| Path | The series of folders leading to a certain file. |

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| **Application Terms:** | |
| Windows Explorer or Finder | A program to navigate files on the computer |
| File Attributes - Properties or Get Info | The critical information about the file without necessarily opening it. |
| Size Attributes | Tells you the size of the file |
| Created, Modified and Other File Attributes | Other properties and attributes about the file without opening it. |
| File Compression | A method of taking a lot of files and compressing it into one folder. |

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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): C:\Users\9606528\Desktop 2. Students will then create (or verify) the following folders inside the new “Computer Programming” directory, “Semester1” and paste the path here: C:\Users\9606528\Programming 1 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: 01010011/01001001/01000100/01000100/01001000/01000001/01001110/01010100/ /01000100/01000101/01010110/01000001/01010010/01010101  Decimal Name: 83/73/68/68/72/65/78/84 68/69/86/65/82/85/  Hex Name: 53/49/44/44/48/41/4E/54/ /44/45/56/41/52/55/   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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