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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- Windows, Mac, Linux |
| Kernel | Portion of OS that monitors io: input and output |
| Binary | Base two, uses 0 and 1 only. Used in machine code |
| Bit and Bit Systems | A bit is 0 or 1, on or off, true of false. The system is how many bits in a sequence the os reads |
| Byte | A group of eight bits |
| Kilo, Mega, Giga, Tera | Kilobyte is 1024 bytes, megabyte is 1024 kilo, a gigabyte is 1024 megabytes, terabyte is 1024 gigabytes |
| Hexadecimal | Base 16, uses 1-9 and A-F |
| Base 2, 8, 10, 16 | binary, octal, decimal, hexadecimal |
| File and File Extension | File is a stored piece of data, File extension is the type of file it is, how it can be read |
| Folder/Directory | Organizational units for files and other folders. |
| Path | It is instructions on how to get to a directory |

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| **Application Terms:** | |
| Windows Explorer or Finder | Helps find filed and folders |
| File Attributes - Properties or Get Info | Shows how big the file is and the extension, and other information about the file. Right click and hit properties or get info |
| Size Attributes | How big it is |
| Created, Modified and Other File Attributes | More attribute under properties stored with the file |
| File Compression | Make a folder into a .zip file |

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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\9547127\ Desktop 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 | 4A | | 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: 01001111, 01101100, 01101001, 01110110 , 01100101, 01110010  Decimal Name: 79, 108, 105, 118, 101, 114  Hex Name: 4F, 6C, 69, 76, 65, 72   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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