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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. |
| Kernel | The centre of an operating system. |
| Binary | System of computer writing using two symbols (usually 1 and 0). Base 2 |
| Bit and Bit Systems | The basic unit of information with computers. Bit systems use bits to transmit and store information. |
| Byte | 8 bits of information. |
| Kilo, Mega, Giga, Tera | 1024 bytes=1 kilo, 1024 kilo=1 mega, 1024 mega=1 giga,1024 giga=1 tera |
| Hexadecimal | A numerical system with a base of 16. Uses 0-9, abcdef |
| Base 2, 8, 10, 16 | Bases of computer bits. |
| File and File Extension | Resource for storing info, needs to be. the type of file that needs to be run. |
| Folder/Directory | Where files is stored. |
| Path | Where a file is in a computer. |

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| **Application Terms:** | |
| Windows Explorer or Finder | File manager. |
| File Attributes - Properties or Get Info | Information of a file. |
| Size Attributes | How many bites of info a file takes up. |
| Created, Modified and Other File Attributes | System info. |
| 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 | 85 | 55 | | 00101010 | 42 | A2 | | 11010100 | 212 | D4 | | 00111010 | 58 | A3 | | 01000100 | 68 | 44 | | 00101111 | 47 | 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:  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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