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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 | An operating system that is software that manages hardware and software resources and does common things in computer programs |
| Kernel | The central core of a computer and controls all other systems lowest level of operating system |
| Binary | A number system comprised of 1 and 0 that can represent 256 values. Base 2 |
| Bit and Bit Systems | Smallest unit of information and number of bits in a system |
| Byte | 8 bits |
| Kilo, Mega, Giga, Tera | 1000, 1000000, 1000000000, 1000000000000 bytes or one thousand, one million, one billion, and one trillion bytes |
| Hexadecimal | Base 16 uses characters 0-9 and A-F |
| Base 2, 8, 10, 16 | Binary, octal, decimal, and hexadecimal |
| File and File Extension | Files must be unique, and file extensions are were they are stored |
| Folder/Directory | Used to indicate where it resides |
| Path | Tells you how to find a document |

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| **Application Terms:** | |
| Windows Explorer or Finder | Where you access your files/file manager |
| File Attributes - Properties or Get Info | Right click on document then click “get info” |
| Size Attributes | How many bytes a file is |
| Created, Modified and Other File Attributes | System info |
| File Compression | Right click on folder/ file then choose “compress” |

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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):HDD1/Users/9618686/ 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:  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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