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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. Examples: Windows, Mac, Linux |
| Kernel | Part of OS that monitors input and output information. |
| Binary | Base 2. Number system using 1s and 0s |
| Bit and Bit Systems | Smallest unit of information. System-How many bits are to be read at once. |
| Byte | Group of 8 bits |
| Kilo, Mega, Giga, Tera | 1024 bytes/2048bytes/3072/4096 |
| Hexadecimal | Base 16 FF=255 |
| Base 2, 8, 10, 16 | Counting systems based on 2, 8, 10, and 16. |
| File and File Extension | Type of file |
| Folder/Directory | Organizational unit for files |
| Path | Series of folders that contain a file |

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| **Application Terms:** | |
| Windows Explorer or Finder | Program that shows all files on your computer. |
| File Attributes - Properties or Get Info | Shows all information about a file. |
| Size Attributes | Tells you how large the file is in bytes. |
| Created, Modified and Other File Attributes | Other information about the file. |
| File Compression | Making a file smaller so it can be exported elsewhere. |

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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):Computer/BOOTCAMP (C:)/Users/9525651/Programming\_1/Term\_1 2. Students will then create (or verify) the following folders inside the new “Computer Programming” directory, “Semester1” and paste the path here: Computer/BOOTCAMP (C:)/Users/9525651/Programming\_1/Term\_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 | | 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: 1000111/1010010/1000001/1001000/1000001/1001101 1001110/1001111/1010010/1010100/1001000/1010010/1001111/1010000  Decimal Name: 71/82/65/72/65/77 78/79/82/84/72/82/79/80  Hex Name: 47/52/41/48/41/4D 4E/4F/52/54/48/52/4F/50   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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