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| **Date Assigned: 9/22/15** | **Date Due: 9/24/15** |
| **Unit:** Methodology | **Turn In List:** **1. Terms, 2. Post timeline, and 3. Grid** |
| *“I can create and use many data types in a simple computer program.”* | |

**Data Types and Variables: A look at the major data types for modern languages**

**Content Objectives:** Students will be able to declare, initialize and assign variable for a program.

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| **Starter Activity** |
| // Consider Mr Kapptie’s grading system where numbers  // are turned into letters. Fill in the blanks in the  // following code to complete the boolean expression.  float grade = random(0,100);  if (\_\_\_\_\_\_\_) {  println("Assign letter grade A.");  } else if (\_\_\_\_\_\_\_\_) { // In one conditional statement, you can only ever have one if and one else. However, you can have as many else if's as you like!  println (\_\_\_\_\_\_\_\_);  } else if (\_\_\_\_\_\_\_\_) {  println (\_\_\_\_\_\_\_\_);  } else if (\_\_\_\_\_\_\_\_) {  println (\_\_\_\_\_\_\_\_);  } else {  println (\_\_\_\_\_\_\_\_);  }  // Create a method to use in an app to display letter grade based on the  // position of mouseX on a line. |

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| **Key Terms:** | |
| Interpreted Language | Language with instruction executed directly, without compiling to machine language- Python |
| Compiled Language | Uses compilers to machine code- there are pre-runtime compiles to machine code |
| Low Level Language | Closer or has fewer layers to machine code, less abstraction- Machine code, now C is considered low level |
| High Level Language | Further away from machine code, translated to assembly language or machine code, lots of abstraction- Racket |
| Execute | To run a program, executable is something the os can run |
| Identifiers | Name that identifies something, like programs or variables |
| Declare Variables | Tell the compiler to make a variable and information about the variable  (int x;) |
| Initialize Variables | Assign a value to a variable initially(x = 5) |
| Assign Variables | Set a value to a variable, this is after the first initialization |

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| **Assignment:** |
| For each data type give the following information. Use the Processing reference as an aid (note that all data types follow the java standard.) You may write N/A where applicable.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **Memory Used** | **Possible Values (Min)** | **Possible Values (Max)** | **Purpose** | **Syntax** | | boolean | 1 bit | N/A | N/A | Tells if true or false | true, false | | byte | 8 bits | 0 | 256 | Store 8 bytes of info | 00000001 | | char | 16 bits | 0 | 127 | Stores letter and symbols | ‘a’ | | color | 32 bits | 0 | 2147483647 | Store info on color | color(255, 0, 0); | | double | 64 bits | A lot less than- -3.4028E+38 | A lot more than  3.4028E+38 | Store a number greater or more precise number than a floating number | double a;  a = 1.23434523 | | float | 32 bits | -3.4028E+38 | 3.4028E+38 | Store large or decimal # | 1.0 | | int | 32 bits | -2,147,483,648 | 2,147,483,647 | Store integers | 1 | | long | 64 bits | A lot less than  -2,147,483,648 | A lot more than  2,147,483,648 | Store huge integers | 50\*10^5 | | String | Depends | N/A | N/A | Store text | “this is a string” | | XML | Depends | N/A | N/A | Represent an object | <mammals> | | Array | Depends | N/A | N/A | Store a list of data | new float[100]; | | ArrayList | Depends | N/A | N/A | Bigger and more convenient but slower | new ArrayList<Par>; | | Table | Depends | N/A | N/A | Stores data in rows and columns | new Table(); |   Create a new processing project with a medium gray canvas size of 1000 x 1000 pixels and draw a black grid on the first made up of lines at every 100 pixels vertically and horizontally. Provide text labels (100, 200, etc.) on the left margin and top margin. |

Notes (Points of interest, mistakes, lessons learned, web resources, and thoughts):

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| I don’t understand XML |