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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 | For most of its implementations execute instructions directly, without previously compiling a program into machine-language instructions. |
| Compiled Language | Turns source code into machine code. |
| Low Level Language | Provides little or no abstraction from a computer’s instruction set architecture- commands or functions in the language map closely to processor instructions. |
| High Level Language | Has strong abstraction from the details of the computer |
| Execute | Run the program |
| Identifiers | Tokens which name language entities i.e variables types |
| Declare Variables | Reserving the memory required for the datatype |
| Initialize Variables | Giving its first value at the beginning application |
| Assign Variables | Assign a value to a variable |
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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 byte | False | True | Used with control statements to determine the flow of a program. | Boolean var  Boolean var = booleanvalue | | byte | 8 bits | -128 | 127 | For sending information to and from the serial port and for representing letters in a simpler format than the char datatype | Byte var  Byte var = value | | char | 16 bits | N/A | N/A | Datatype for characters, typographic symbols such as A, d, and $. Store in Unicode format. | Char var  Char var = value | | color | 32 bits | 0 | 255 | Datatype for storing color values | Color c1 = color(204, 153, 0);  color c2 = hex | | double | 64 bit | -3.40282347E+38 | 3.40282347E+38 | Datatype for floating point numbers larger than those that can be stored in a float. | Double var  Double var = value | | float | 32 bit | -3.40282347E+38 | 3.40282347E+38 | Datatype for floating point numbers, numbers that have a decimal point | Float var  Float var = value | | int | 32 bit | -2,417,483,648 | 2,417,483,648 | Datatype for integers, numbers without a decimal point. | Int var  Int var = value | | long | 64 bit | - 9223372036854775807 | 9223372036854775807 | Datatype for large integers. | Long var  Long var = value | | String | 1 byte per character | N/A | N/A | Sequence of characters | String(data)  String(data, offset, length) | | XML | Depend on file size | N/A | N/A | Representation of an XML object, able to parse XML code | XML(name) | | Array | Depend on datatype | N/A | N/A | A list of data | Datatype[] var  Var[element] = value  Var.length | | ArrayList | Depend on datatype | N/A | N/A | Stores a variable number of objects | ArrayList<Type>()  ArrayList<Type>(initialCapacity) | | Table | Depend on the file size | N/A | N/A | Stores data with multiple rows and columns | Table ()  Table (rows) |   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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