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| **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 | An interpreted language needs to be translated by an interpreter to read and execute the code. |
| Compiled Language | In a language the computer can directly understand. |
| Low Level Language | Hard for humans to understand, computer can understand. |
| High Level Language | Easy for humans to understand. |
| Execute | To run the program. |
| Identifiers | Name of variable. |
| Declare Variables | Int x; |
| Initialize Variables | Int x= 10; |
| Assign Variables | x = 12 |

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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 | False | True | Control statements. | boolean a = false; | | byte | 8 bits | -128 | 127 | Converts value of primitive data type to its byte representation. | char c = ‘E’  byte b = byte(c)  println(c + “ : “ + b); | | char | 16 bits | n/a | n/a | Datatype for Unicode characters. | char m;  m = ‘A’ | | color | 32 bits | n/a | n/a | Storing color values. | color c1 = color (204, 153, 0)  fill(c1) | | double | 64 bits | -1.76769313486231570E+308 | 1.76769313486231570E+308 | For floating-point numbers larger than can be stored in float. | double var;  double var = value; | | float | 32 bits | 3.40282347E+38 | 3.40282347E+38 | For floating-point numbers. | float var;  float var = value; | | int | 32 bits | -2,147,483,648 | 2,147,483,647 | Numbers without decimal. | Int var;  Int var = value; | | long | 64 bits | -9,223,372,036,854,775,808 | 9,223,372,036,864,775,807 | Datatype for long integers. | long var;  long var = value; | | String | n/a | n/a | n/a | For sequences of characters. | String str1 = "CCCP";  char data[] = {'C', 'C', 'C', 'P'};  String str2 = new String(data);  println(str1); // Prints "CCCP" to the console  println(str2); // Prints "CCCP" to the console | | XML | n/a | n/a | n/a | XML is a representation of an XML object, able to parse XML code. | void setup() {  xml = loadXML("mammals.xml");  XML[] children = xml.getChildren("animal"); | | Array | n/a | n/a | n/a | An array is a list of data. | datatype[] var  var[element] = value  var.length | | ArrayList | n/a | n/a | n/a | An ArrayList stores a variable number of objects. | ArrayList<Type>()  ArrayList<Type>(initialCapacity) | | Table | n/a | n/a | n/a | Stores data with multiple rows and columns. | table table;  void setup() {  table = 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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| int x, y, x2, y2;  void setup () {  size(1000, 1000);  stroke(0);  }  void draw () {  //horizontal  line(x, y, width, y);  line(x, y += 100, width, y);  text(y, 5, y-10);    //vertical  line(x2, y2, x2, height);  line(x2 += 100, y2, x2, height);  text(x2, x2-35, 15);  } |