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| **Date Assigned: 1/5/16** | **Date Due: 1/7/16** |
| **Unit:** Languages | **Turn In List:** **1. Terms** |
| *“I will be able to declare the language of focus for Semester 2 .”* | |

**Computer Programming Languages: An in-depth analysis**

**Content Objectives:** Students will research each of the five languages acceptable for the 2A computer programming state CTE certification. The following [Wiki article](http://en.wikipedia.org/wiki/Comparison_of_programming_languages) may help in your search. [Language popularity article](http://en.wikipedia.org/wiki/Measuring_programming_language_popularity).

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| **Starter Activity** |
| Write a class that will run in Processing. You may choose from the following list of class names: Human, Cat, Dog, Spaceship, Soldier or Planet. The class must contain a name, at least 2 class variables, 1 constructor, a display function and at least one action function. Paste code below:  class Spaceship {  color c;  float x;  float y;  float z;  float a;  float b;  float d;  float speed;  float left;    Spaceship(color tempC,float tempX, float tempY, float tempSpeed, float tempZ, float tempA, float tempB, float tempD) {  x = tempX;  y = tempY;  z = tempZ;  a = tempA;  b = tempB;  d = tempD;  speed = tempSpeed;  left = random(2);  }    void display() {  fill(c);  triangle(x,y,z,a,b,d);  ellipse(x,y,z,a);  textSize(23);  text("USS BUDDHA", x+10, y);  }    void fly() {  if (left<= 1) {  x = x - speed;  if (x < 0) {  x = width;  }  } else {  x = x + speed;  if (x > width) {  x = 0;  }  }  } |

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| **Key Terms: (lookup each language and write a short description of each)** | |
| **C++** | General purpose. It has imperative, object-oriented and generic programming features. |
| **C#** | Strong typing imperative, declarative, functional, generic, object oriented developed by Microsoft |
| **Java** | Concurrent, class-based, object-oriented. Compiled Java code can run on all platforms |
| **Python** | General purpose, high level programming. Uses less lines to express concepts than C# and Java |
| **Visual Basic** | Programming by using a combination of visual components or controls as well as their actions. Writing lines of codes is performed for additional functionality |
| Type Safety | The extent to which a programming language discourages or prevents type errors |
| Interpreted | A programming language for which most of its implementations execute instructions directly, without previously compiling a program into machine-language instructions |
| Procedural | A programming paradigm, derived from structured programming, based upon the concept of the procedure call. |
| Compiled | A programming language whose implementations are typically compilers, and not interpreters |

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|  | **C++** | **C#** | **Java** | **Python** | **Visual Basic** |
| Intended Use | Games, office applications, graphics, and video editors, and operating systems | NET Framework and APIs | Most popular; can run on any Java virtual machine; particularly for client server web applications | Used in GIS programming; scripting language for ArcGIS, and Quantum GIS | Many different programs using a more visual programming than actually writing programming |
| Strongly Typed | No | Yes | Yes | Yes | Both |
| OS’s | Windows, Mac OS, Linux | Windows | Windows, Mac OS, Linux | Windows, Mac OS, Linux | Windows |
| Industry | Securities industry, Wireless telecoms | .NET development | Business applications | Scripting, aviation, apparel, insurance industry | Laboratory automation industry |
| **Atoms or Bits** | Atoms, bits | Bits | Bits | Bits, atoms | bits |
| Current Version | ISO/IEC 14882:2014 | C# 6.0 | **Java** SE 8 | Python 3.5.1 | Visual Basic 10 |
| Official Standard | https://isocpp.org/std/the-standard | https://msdn.microsoft.com/en-us/library/ff926074.aspx | http://www.oracle.com/technetwork/java/codeconvtoc-136057.html | https://www.python.org/doc/ | https://msdn.microsoft.com/en-us/library/b4z62wxz(v=vs.90).aspx |

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| **History and Background of the Language you are interested in:** |
| You may work in pairs for this portion but you need to submit your own file to Canvas. Give the When’s, Who’s, Why’s, Where’s, How’s and worldwide popularity pulse applicable for the language you are considering. (Note, this is NOT your final decision.)  James Gosling, Mike Sheridan, and Patrick Naughton started the Java language project in June 1991. It was originally designed interactive television in the United States. It was created to be simple object-oriented and familiar. Java today is the most popular programming language in the world. Using |

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| **Assignment:** |
| Rewrite Class from Starter:  Find the official standard website or simply do a google search for your language and “class” or “object” and do your best to re-write the class from starter in the new language (code not require to build or compile.)  class Spaceship {  color c;  float x;  float y;  float z;  float a;  float b;  float d;  float speed;  float left;    Spaceship(color tempC,float tempX, float tempY, float tempSpeed, float tempZ, float tempA, float tempB, float tempD) {  x = tempX;  y = tempY;  z = tempZ;  a = tempA;  b = tempB;  d = tempD;  speed = tempSpeed;  left = random(2);  }    void display() {  fill(c);  triangle(x,y,z,a,b,d);  ellipse(x,y,z,a);  textSize(23);  text("USS BUDDHA licensed by Northrop Industries", x+10, y);  }    void fly() {  if (left<= 1) {  x = x - speed;  if (x < 0) {  x = width;  }  } else {  x = x + speed;  if (x > width) {  x = 0;  }  }  } |

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

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