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| **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 {  // Member variables  int x, y, health, ammo, lives, radius, score;  char displayMode;  color c1;  String warning;  // Constructor  Spaceship(color c1) {  x = 0;  y = 0;  health = int(random(500));  ammo = 5;  lives = 3;  radius = 40;  score = 0;  displayMode = '1';  this.c1 = c1;  warning = "";  }  // Member methods  void display(int x, int y) {  this.x = x;  this.y = y;  if (displayMode == '1') {  stroke(0);  strokeWeight(1);  rectMode(CENTER);  fill(c1);  rect(x, y, 50, 80, 10);  triangle(x-24, y-35, x, y-60, x+24, y-35);  //fill(c1);  ellipse(x, y-15, 20, 20);  fill(230);  ellipse(x, y-20, 18, 8);  fill(c1);  quad(x, y+20, x-10, y+30, x, y+60, x+10, y+30);  quad(x-25, y+20, x-40, y+35, x-20, y+60, x-25, y+40);  quad(x+25, y+20, x+40, y+35, x+20, y+60, x+25, y+40);  strokeWeight(3);  stroke(255, 255, 0);  line(x-22, y+10, x+22, y+10);  textAlign(CENTER);  textSize(6);  fill(#3647FC);  text("NASA", x, y-40);  textSize(15);  fill(255, 0, 0);  text(warning, width/2, height \* 0.9);  }  }  boolean rockIntersection(Asteroid asteroid) {  float distance = dist(x, y, asteroid.x, asteroid.y);  if (distance < radius + asteroid.radius) {  return true;  } else {  return false;  }  }    boolean puIntersection(PowerUp powerup) {  float distance = dist(x, y, powerup.x, powerup.y);  if (distance < radius + powerup.radius) {  return true;  } else {  return false;  }  }  boolean isOut() {  if (ammo < 1) {  return true;  } else {  return false;  }  }  } |

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| **Key Terms: (lookup each language and write a short description of each)** | |
| **C++** | Object oriented version of C. |
| **C#** | Microsoft’s answer to Java. |
| **Java** | Cross-platform language |
| **Python** | Web-development language, interpreted language. |
| **JavaScript** | Used for web-development. |
| Type Safety |  |
| Interpreted | An interpreter needs to be running. It looks directly at text files and runs them without having to change it into machine code which makes it faster (e.g. Python). |
| Procedural | Start at top, go to bottom. |
| Compiled | A compiler turns source code into binary. |

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|  | **C++** | **C#** | **Java** | **Python** | **JavaScript** |
| Intended Use | Manipulate hardware, create software | Desktop and Web applications | Internet-based applications | General-purpose | Gives web pages interactive elements |
| Strongly Typed | Yes | Yes | Yes | Yes | No |
| OS’s |  | Windows | Cross-platform | Cross-platform | Web browser |
| Industry Examples | Google, Adobe, Amazon | Stack Overflow, Microsoft | Airbnb, Netflix, Pinterest | Instagram, Spotify, Quora | Paypal, Uber, eBay |
| **Hardware or Software** | Both | Both | Software | Both | Software |
| Current Version | C++20 | 8.0 | SE 15.0.2 | 3.9.1 | 1.8.5 |
| Official Standard | [Link](https://www.cplusplus.com/reference/) | [Link](https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/) | [Link](https://docs.oracle.com/javase/10/docs/api/java/lang/ref/Reference.html) | [Link](https://docs.python.org/3/reference/) | [Link](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference) |

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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.) |

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| **Assignment:** |
| Rewrite Class from Starter (see above):  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.) Make sure you look at syntax for:   * Class Name Declaration * Declaring Member Variables * Constructor * Member Methods |