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| **Date Assigned: 2/6/17** | **Date Due: 2/8/17** |
| **Unit:** Language Basics | **Turn In List:** **1. This document** |
| *“I will understand and implement arrays (or lists) in an application.”* | |

**Title: Arrays and Multidimensional Arrays**

**Content Objectives:** Students will familiarize themselves with creating, initializing, and editing arrays.

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| **Starter Activity** |
| Include code for creating an array (or list) of integers called nums and setting the values within the array to a range of numbers 0-9.  #include <iostream>  #include <array>  using namespace std;  int main() {  int nums [10] = {0,1,2,3,4,5,6,7,8,9};  for (int i = 0; i < 10; i++) {  std::cout << nums[i] << std::endl;  }  return 0;  } |

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| **Assignment:** |
| Students will use the following websites and internet searches to complete the table below:  Java: <http://www.tutorialspoint.com/java/java_arrays.htm>  C++: <http://www.cplusplus.com/doc/tutorial/arrays/>  Python: <http://www.tutorialspoint.com/python/index.htm> Lists, tuples and dictionaries  C#: <http://www.tutorialspoint.com/csharp/csharp_arrays.htm> |

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| **Include Sample Code Concepts Below (copy and paste lines from editor)** | |
| Include code for updating only the first position of the array in the starter activity to the value of 5 | int nums [10] = {5,1,2,3,4,5,6,7,8,9}; |
| What is the syntax for printing the entire array in the starter activity | for (int i = 0; i < 10; i++) {  std::cout << nums[i] << std::endl;  } |
| What is the syntax for printing only the second position in the starter activity | std::cout << nums[1] << std::endl; |
| What is the syntax for creating an empty integer array (or list) named myList | Int mylist[ ] |
| What is the syntax for populating the myList array (or list) with sequential numbers 1-99 | Int mylist[array{1-99} ] |
| What is the syntax for populating myList with random numbers | Hint: you may need an import or include statement… |
| What is the syntax for retrieving a random value from within an array or list | Hint: you may need an import or include statement… |

Psuedocode an app that simulates a dice roll with at least one array (or list) called dice1 and allows the user to run it to produce a random value from dice.

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| Make number variables for the number of sides and the number of dice to roll (int). Ask the user to input these values. Make an array for the possible number of sides. Link the number of sides to the array. Put out the random values you have “rolled” by using a while statement and using srand(time(0)). |

Code an app that at least meets the requirements for the above psuedocode but also allows the user to select a set number of dice to roll. Try creating a method to simulate the dice roll.

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| #include <iostream>  #include <array>  #include <vector>  #include <cstdlib>  #include <ctime>  using namespace std;  int main () {  srand(time(0));  int sides;  int nDice;      cout << "Number of sides on your dice : ";  cin >> sides;  cout << "Number of dice being rolled : ";  cin >> nDice;    array < int, 121 > diceArray;    for (int i=0; i < sides; i++) {  diceArray[i] = (i+1);  }  cout << "Numbers you rolled : " << endl;    int i = 1;  while(i <= nDice ) {  int r = rand() % sides;  cout << diceArray[r] << endl;  i++;  }    return 0;  } |