**Introduction to Systems Programming (Systems I)**

**Homework #3 (Part A)**

**Due: Wednesday February 20 2019 before 11:59 PM**

**Email-based help Cutoff: 5:00 PM on Tue, Feb 19 2019**

Maximum Points: 15

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| **Submission Instructions**  This part of the homework assignment must be turned-in electronically via Canvas. Ensure you name this document *MUid\_homework3\_PartA*.docx, where *MUid* is your Miami University unique ID. Complete the method shown for each problem. For each method, you can develop and test them in NetBeans and just copy-paste your solutions into this document.  Once you have completed answering the questions save this document as a PDF file (don’t just rename the document; that is not the correct way to save as PDF) and upload it to Canvas  **General Note**: Upload each file associated with homework (or lab exercises) individually to Canvas. Do not upload archive file formats such as zip/tar/gz/7zip/rar etc. |

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| **Objective** |
| The objective of this homework is to:   * Understand working with std::vector. * Practice answering exam style questions |

**Required reading**

Prior to answering the questions in this homework briefly review the following chapters from the E-book titled “[C++ How to Program](http://proquest.safaribooksonline.com.proxy.lib.miamioh.edu/9780134448930)” (all students have free access to the electronic book):

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|  Chapter 7.10 (std::vector) |  Chapter 14.1 – 14.6 (File I/O) |

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|  | Although the Safari E-books are available to all students there are only a limited number of concurrent licenses to access the books. Consequently, do not procrastinate working on this homework or you may not be able to access the E-books due to other users using them. |

1. What is quoted text and how do you read quoted text in C++? Explain with a suitable example (other than the one shown in Chapter 14) [**1 points**]

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| Quote text is test in a file that is surround by quotation marks. In order to read quoted text you can use the stream manipulator **quoted(),** for example:  **inFile >> person >> quoted(name)**  This reads the a name in quotes like “Leann Hunter” as one string and stores it in the variable **person** without the quotation marks. |

1. Assume you have a method called processLines(std::istream& is, std::ostream& os) that process line-by-line. Complete the main method below to call processLines method to process the 3 lines: "Line #1", "Second Line", and "Last line". The output should be written to standard console output stream. (Hint: Use a std::istringstream) [**3 points,** In exam you would have 5–7 minutes to write the 3 line solution]

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| // Prototype declaration  **void** **processLines**(std::istream& is, std::ostream& os);  **int** **main**() {  std::string input;  while(std::istringstream is >> input)  processLines(input, std::count);  } |
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1. Complete the following method that returns a vector with only even values in the src vector. If the src vector has values {2, -4, 7, 9, 3, 8} this method should return a vector with values {2, -4, 8}. [**3 points**, In exam you will have about 7 minutes to write the solution]

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| **using** IntVec = std::vector<**int**>;  IntVec **evens**(**const** IntVec& src) {    } |

1. Complete the following method that returns a vector that contains a reverse of the words. For example if src is {"one", "two", "three"} the method should return a vector with strings {"three", "two", "one"} [**3 points**]

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| **using** StrVec = std::vector<std::string>;  StrVec **reverse**(**const** StrVec& src) {    } |

1. Complete the following method that returns a vector with the first n prime numbers. For example, if n == 7, this method should return a vector with values {1, 2, 3, 5, 7, 11, 13}. [**5 points**, In exam you will have about 10 minutes to write the solution]

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| **using** IntVec = std::vector<**int**>;  IntVec **getPrimes**(**int** n) {    } |