1

Outline for my algorithm of success is as follows,

1. Read and understand required materials for the class, including,

    (a) Syllabus

    (b) Pre-requisite reading and knowledge

    (c) Outline and due dates for the course.

2. Practice C++ programming using practice problems relating to data structures and abstraction.

3. Do required course reading before lecture.

4. Do required Assignments in a timely manner and follow the assignment grading rubric.

5. Attend class and lab and finish pre-labs in a timely manner.

2

(Computer Ethics involves using a computer in an ethical manner in which one respects the privacy of others (including intellectual property) and integrity of the computing environment. Three examples or rules that might be important to follow are,

    (i) Do not use others intellectual property, including algorithm or code.

    (ii) Design programs with regards to the system or objective of the assignment.

    (iii) Do not use computers to harm others, which may include but not limited to cyber bullying.

(Plagiarism defined in showstringspaces=falsethe context of computer ethics is the act of using another persons intellectual property and passing it off as your own.

(Cyberbullying is defined as the use electronic communication to bully others.

(Intellectual Property is defined as a design or methods (algorithm) for a system that is the result of a creative process and to which one has rights that are protected by the judicial system.

3

(a) Tail recursion is defined as performing the set of calculations that are to be done before making your recursive call, which is the last operation. A function that is tail recursive makes a function call at the very end, thus not it does not require the entire stack.

(b) A divide and conquer algorithm is defined as an algorithm that breaks a problem into two sub-problems that are simple enough to solve. For example a merge sort will sort an array by **dividing** the array into chars and **conquering** by comparing each char.

(c) The base case of a recursive function is a case for the solution can be stated without recursion. this algorithm the the base case returns the trivial case of array size 1 and the rest of the function breaks the array into smaller pieces by comparing each index with current one and after max is determined the recursive call is made thus being an example of tail recursion.

```
int array_max(int a[] , int n)
{
  int tail_max , max;
  printf(" val = %2i  , head = %2i" , a[0] , n);
  //base case
  if(n==1)
  {
    max = a[0];
  }
  else
  {
    tail_max = array_max(&a[1] , n-1);
    if(a[0]> tail_max)
    {
      max = a[0];
    }
    else{
      max = tail_max;
    }
  }
  printf("n =%2i  val=%2i  returning = %2i" ,n,a[0] ,max);
  return max;
}
```

4

Three features of VIM

1. To start VIM just type VIM followed by [filename].

2. vimtutor is available on most linux package systems to learn vim.

3. There are options available on the 'NIX man pages to operate vim, vim [options] [filename]

Three features of gdb

1. To start gdb an object file is needed, so in C++ to compile "g++ *.cpp -o new" , then the debugger is started using "gdb new" command on the terminal.

2. Running the program in the debugger involves using "(gbd) run".

3. Stepping into a function call involves using the "(gdb) step".