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.
3. Do required course reading before lecture.
4. Do required Assignments 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,

1. Do not use others intellectual property, including algorithm or code.
2. Design programs with regards to the system or objective of the assignment.
3. Do not use computers to harm others, which may include but not limited to cyber bullying.

3

An example of a simple differentiation program written in the C language is shown below, where the main function implements both forward and central differentiation (where the order of the error is $O(h)^2$ compared to $O(h)$), Here the three aspects of the code that represent readability and maintainability are i) functions and variables are named in an appropriate manner, ii) the code is flexible and can be modified with ease, iii) the program has proper indentation. Three aspects that are however missing are the lack of comments, the use of more functions to reduce clutter in the main function and lack of documentation.

```
#include <stdio.h>
#include <math.h>

#define h 1e-5
#define xmax 7
#define xmin 0
#define xstep 0.01

int main()
{
  double dc, result, x;
  double f(double);
  FILE *output;
  output = fopen("diffFile.dat","w");
  for(x = xmin; x <=xmax; x =xstep){
    fprintf(output, "%f\t", x);
    result = (f(x+h)-f(x))/h; //forward differentiation
    fprintf(output,"%.10f\t", result);
    result = (f(x+h/2)-f(x-h/2))/h; //central differentiation
    fprintf(output,"%.10f\t", result);
  }
return 0;
```

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```
}

double f(double x){
  return (cos(x)*sin(x));
}
```

4

Three keywords that come up in the readings are the for keyword, the return keyword and the double keyword. Each of these keywords are used in the program in problem 3. Each of these keywords are standardized in every language with the exception being the double keyword which may not be included in a language that has a defined type (like Python), however most languages include all these keywords.