U4A2 Assignment – Feasibility Study – Humza Khokhar

Step One: Problem Definition

The topic for the program development is the subject of Chemistry 11 in the Ontario curriculum. The client for the software is a chemistry teacher. The chemistry teacher specified a program built to teach a lesson on molar mass and molecular mass. The users of the software are students who are learning Chemistry 11. The lesson being developed has several elements, the main elements being the image of the Periodic Table of Elements displayed to the user, definitions pertaining to the lesson (molar mass, units, etc.), some demonstration calculations for the user as they proceed, practice problems given to the user, and a calculator to calculate molar mass and molecular mass.

Step Two: Problem Analysis

A problem I expect to have with developing the program is the practice problems for the user to solve and input answers. The issue being the final answers that the user inputs, may not be the same decimal places as the one defined in the program, or the user used different values of atomic mass. In a predicament as such, a solution is to use multiple choice answers for the practice problems, not is there one defined answer, but aspects like units can come into play and be manipulated (Ex: Q:What is the molar mass of water? The answers can be sneaky in the sense that the write answer is written but the units are of molecular mass.). There is no significant hardware required for the program, software required is an installation of Java, and there are no significant costs associated. The program can be run on any OS, if there is a Java installation. The lesson plan to develop is fairly simple, as is the understanding of the required chemistry. The time constraint for developing the software is for August 13, 2019

Step Three: End User Requirements/Recommendation

The end user is students learning Chemistry 11, the lesson being on molar mass and molecular mass. The client is a chemistry teacher; Mrs. Ada Esonwanne from TCDSB. The end user requirements according to the client are the user learns definitions, the units associated, and navigating through the periodic table for answering related question. The client has specified the practice problems be rounded to two decimal places, and the students be wary of that. The interview with the client occurred on August 7, 2019.

Step Four: Development Plan

Pseudocode:

Begin Program

Print Welcome to Chem 11 Lesson

Print Definitions

Print Units Explanation

Print Practice Questions

Input Multiple Choice

Verify Answer

Correct

Print Correct

Incorrect

Print Try Again

Verify Answer

Prompt for calculator

Yes -> Execute Calculator

Input Element Names & Atomic Masses

Calculate molar mass and molecular mass

Print molar mass and molecular mass

Prompt for calculator again

Yes -> Execute Calculator

No -> End Program

No -> End Program