The project runs in Visual Studio 2008 express edition.

The Header files that are required are: “Directions.h”, “FilenamesReader.h”, “InitialiserClass.h”, “ProcessingInput.h”, ”TheChamber.h”, “TheClasses.h” and “Velocities.h”.

The .cpp files that are required for the project to compile and run is the “Simulation.cpp” which contains the main function, the “Directions.cpp”, the “Classes.cpp”, the “FilenamesReader.cpp”, the “InitialiserClass.cpp”, the “ProcessingInput.cpp”, the “TheChamber.cpp” and the “Velocities.cpp”.

The .doc file “Introduction to the Particle Simulation project” describes the classes and the general structure of the project. The .doc file “Particle Simulation Execution” provides six examples of executing the project. The results of the simulation are depicted in the “.txt” file “Case1.txt” through “Case6.txt” respectively. Those files are included in the .rar file “Cases”.

The input files are the most important aspect for the project. The number of inputs as well as the inputs per se are determined by those files. I gave to the user the flexibility to change the name of the input files at will by amending the entries of first and foremost input file the “Filenames.txt”. This file should have only four lines otherwise the program will terminate its execution. The first line should contain the name of the file which contains the directions, the second line should contain the name of the file which contains the Types of the particles, the third line should contain the name of the file which contains the directions for each particle and the fourth line should contain the name of the file which contains the terminal coordinates of the chamber. If this is not the case the execution of the program will be interrupted. For my convenience I names those files “Directions.txt”, “Type.txt”, “Coordinates.txt” and “ChamberTerminalCoordinates.txt” respectively.

Regarding the “Directions.txt” each line thereof should have the same number of directions otherwise the execution of the program will be interrupted and terminated. Furthermore, if in one line there is a character different that “L”, “U”,”D” or “R” the execution of the program will be interrupted and the program will be terminated.

Regarding the “Type.txt” this file should have the same number of lines as the “Directions.txt” otherwise the execution of the program will be interrupted and the program will be terminated. Moreover if in a line there are more than one characters the program’s execution will be interrupted and the program will be terminated. If now the character that is in each line of the”Type.txt” is different from either “P” or “N” or “E”, the program’s execution will be interrupted and the program will be terminated.

Regarding the “Coordinates.txt” this file should have the same number of lines as the “Directions.txt” and the “Type.txt” otherwise the execution of the program will be interrupted and the program will be terminated. Moreover, if there are more than one coordinates or if there is a space the execution of the program will be interrupted and the program will be terminated. If even one of the coordinates is not an integer the execution of the program will be interrupted and the program will be terminated. The coordinates should be separated by a comma otherwise the execution of the program will be interrupted and the program will be terminated. The existence of the right or left parenthesis is tentative. A line could be either “(5,4)” or “(5,4” or “5,4)” or “5,4”.

The “ChamberTerminalCoordinates.txt” file should contain four lines otherwise the execution of the program will be interrupted and the program will be terminated. Each line should contain one integer otherwise the execution of the program will be interrupted and the program will be terminated. Each integer should be greater or equal to zero otherwise the execution of the program will be interrupted and the program will be terminated. The first line of the file is reserved for the maximum x-coordinate, the second line of the file is reserved for the minimum x-coordinate, the third line of the file is reserved to the maximum y-coordinate and the fourth line of the file is reserved to the minimum y-coordinate. The last restriction imposed is that both the minimum x-coordinate and the minimum y-coordinate should be zero, otherwise the execution of the program will be interrupted and the program will be terminated.