Test for the Position as Programmer in the GameDesign Department

We want you to write a Windows C/C++ simulation tool for the publicly available “Atkins Diet” Slot Machine. http://wizardofodds.com/play/slot-atkins/

This simulator is not a playable game with graphical output. It is a tool to analyze the underlying maths model statistically over millions of games.

If you are not familiar with slotgames, play the game for a while, and also change the win lines, to see what happens.

A detailed description can be found here: http://wizardofodds.com/play/slot-atkins/atkinsdiet.pdf

The page offers all the information required to implement a game simulation.

The winlines are shown by hovering over the numbers on the side of the game.

Read the pdf carefully!

Write a programm with a GUI that is able to

1. Open a file containing the game configuration (Pay-table, Reel Strips, Lines Configuration) in a reasonable, human readable format
2. Evaluate the game without the free spins, by setting the reels to all possible combinations and analyzing the symbols on the win lines according to the pay rules.
3. Output the Hits and probabilities while the evaluation is running. The values given in the pdf are for one line. The probabilities are calculated by dividing the Hits by the number of tested combinations. Playing on more lines (eg 2), will also multiply (in this case double) the number of hits.
4. Output the “Return” of each combination, which is probability times prize in the pay table.
5. Same as 4 but for the scatters. Here the prize has to be multiplied by the number of lines played per game, as the chance for a win does not change with the number of lines played.
6. Count the number of games with a win and output the “HitRate” defined as “Number of simulated games” divided by “games with a win”. This value will change depending on the number of lines.
7. Save the results to a output file in a reasonable format.

Run that program first only on one winline (the first line) and compare your results to the ones in the document. As soon as they are correct, try increasing the number of lines. The “Return” has to stay the same.

Modify your code to be also able simulate the game: Now the reels stop at a random position for each game, as in the real game. Additionally add the free spins: whenever you have 3 or more “Scale” symbols on the screen, 10 free games are awarded. All the wins are x3 during the free spins. It is also possible to win more free games during the free games, by having again the 3 or more “scale” symbols on the screen. Let the game run for a large number of games and verify that the “return” gets close to the theoretical value. Run the simulation again on more than 1 line.

Running the simulation for a few million games can take very long.

Try to improve the speed and explain your modification and the impact on simulation speed.

What could be the next steps to improve the program.

Supply the project as complete source code package and as compiled binary (in case we are unable to compile it)

A trial version of Visual Studio 2010 Professional can be found here:

http://www.microsoft.com/downloads/de-de/details.aspx?familyid=26bae65f-b0df-4081-ae6e-1d828993d4d0&displaylang=de