Notes for Dissertation Presentation

Slide 1:

* Intro and what topic are.

Slide 2:

* Rules of Sudoku: Every row, column and 3x3 box (in standard sudoku) must have all numbers from 1-9 once.
* Another way of looking at it is that every column, row, and box must add up to 45 using unique numbers
* Boxes appear over row, column and box

Slide 3:

Aim: Create a test bed that takes a range of sudoku solving algorithms and compares them using a range of difficulty of puzzles.

Objectives:

* Explore current methods of sudoku solving.
* This is important for establishing a base for the project and find current algorithms that I can use to compare with each other.
* Establish test data that would allow for comparison of different algorithms.
* Important to test algorithms on different difficulties of puzzle based on number of empty cells
* Select algorithms for sudoku solving that are to be compared.
* Using the research from sudoku solving algorithms, select algorithms to be implemented.
* Develop test bed to allow comparison of algorithms.
* Allow me to insert different puzzles and algorithms to allow me to compare them
* Evaluate implemented sudoku algorithms on their effectiveness at solving a rank of complexities of puzzle.
* Using data collected from test bed with different algorithms, to compare them finding the most efficient algorithms at different difficulties???

Slide 4:

Backtracking:

* Is a brute-force algorithm
* Use diagram on screen
* Cycles through numbers one at a time, going one cell at a time until there is a broken rule.
* Then it backtracks and changes numbers until there isn’t an error and keeps going forward.

Stochastic:

* Is a type of algorithm for solving sudoku
* Randomly assigns number to each cell
* Calculate errors that are caused by numbers entered into grid
* Shuffle inserted numbers and calculate errors again, repeat this until there are no errors
* Example: Randomly assign numbers 1-9 in each 3x3 box (normal sudoku)
* Check if each row adds up to 45. If they don’t, find duplicates in row and shuffle them around

Slide 5:

* Research into different stochastic algorithms: different ways to assign numbers to cells, calculate errors and shuffle numbers
* Reading research while doing first implementation of testbed and modelling algorithms so can use fresh research to help modelling.
* Gap for Christmas and January exams
* Can use first modelling and implementations of algorithms from first semester to speed up development in the second semester
* Christmas also allows me to do more research into implementation that I can use in the second semester.
* Test bed and test data need to be created before algorithm implementation so there is a base that I can use to debug the algorithms that I implement
* Agile Methodology – adding things incrementally: algorithms 1 at a time, test bed and test data creation

Slide 6:

* Algorithm complexity: short space to time to develop algorithms in the second semester, should be sped up due to research and modelling in the first semester.
* My own skill: yet to know how complex the algorithms would be to implement, again could be problem with timeframe.
* Testbed implementation: without more research, implementation might be hard, although could be basic which might cut down on time taken. Could possibly have GUI but VERY unlikely
* Deliver project on time: a lot of factors involved with development but due to previous planning before implementation, I believe it will be possible.