Report for TPK4186 assignment 2

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Contents

Modules

ChessGame.py
chessgames.py
Newdoc.py
tree.py
Main.py
- tests of the different tasks can be found in this file

Packages

The packages used in this assignment are:
- matplotlib.pyplot
- re
- numpy
- docx

All the packages above shall be available on conda-forge, except of docx which is used to create word documents. It can be installed by running the command "conda install -c conda-forge python-docx" on Anaconda prompt.

Info

Every single task is performed when running main.py, it will create both all files to write to, so that these can be checked out if they work

Tasks

These are the tasks of the assignment.

2.1 Games

This task focuses on encoding games and structure data.

Task 1

The structure is implemented in chessgame.py.

Task 2

The function is implemented in chessgame.py.

Task 3

The function is implemented in chessgames.py.

Task 4

The structure is implemented in chessgames.py.

Task 5

The functions are implemented in chessgame.py.

2.2 Statistics

This task focuses on treating the data. Here, we tested the functions and created the doc seen in attachments.

Task 6

The functions are implemented in Newdoc.py. Word docx files are here being used as the file format.

Task 7

The functions are implemented in Newdoc.py

Task 8

The plot functions are implemented in Main.py

2.3 Openings

Task 9

The structure is implemented in tree.py.

Task 10

The function is implemented as a part of the first function in main.py. It also reads the games metadata into account

Task 11

The function is implemented in tree.py. `printTreetodepth()` `Takes in the depth to` `search in halfmoves and the documentstructure which we want to print to`

Task 12

The function is implemented in tree.py. called `printTreetocount()` `Takes in the` `number of times we have seen a move to search and the documentstructure` `which we want to print to`

`explanation for task 11 and 12 as a drawing:`

depth: 1, previous moves: [], move: W d4, counted: 861, Whitewins: 232, Blackwins: 87, draws: 542

depth: 2, previous moves: ['W, d4'], move: B Nf6, counted: 552, Whitewins: 154, Blackwins: 57, draws: 341

depth: 3, previous moves: ['W, d4', 'B, Nf6'], move: W c4, counted: 472, Whitewins: 133, Blackwins: 50, draws: 289

depth: 1, previous moves: [], move: W e4, counted: 1240, Whitewins: 345, Blackwins: 149, draws: 746

Here we have the first move being d4, then Nf6, c4. another branch will then start at depth 1 given first move e4.

each time the depth doesnt increase by one, that means that it is a branch of the last time a move with the given depth -1 was printed

Attachments

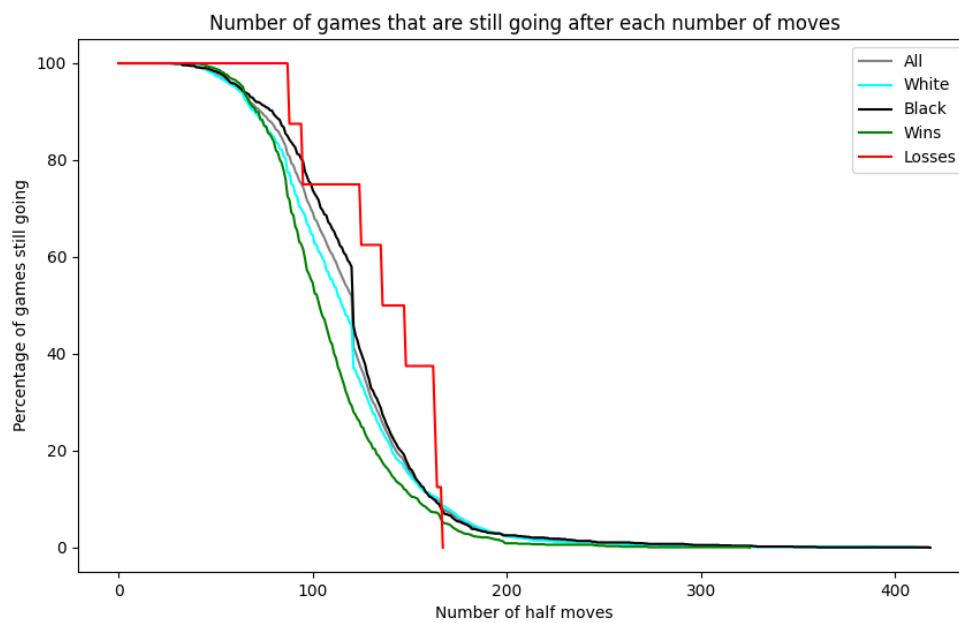Below is the docx file that was created with the statistics of the games.

My Report

Stockfish 15 64-bit

Total number of games: [992, 8, 1600]

Wins, Losses, Draws

	Wins	Losses	Draws
Total	992	8	1600
White	698	2	601
Black	294	6	999

	Average	Standard Deviation
Total	120.26230769230769	39.11797297993816
White	117.32744043043813	39.49432976140451
Black	123.20169361046959	38.513858380522365
Wins	109.8225806451613	46.724184981707545
Losses	136.75	7.731274481885034

Moves up to count 3

depth: 1, previous moves: [], move: W f4, counted: 16, Whitewins: 3, Blackwins: 6, draws: 7

depth: 2, previous moves: ['W, f4'], move: B d5, counted: 10, Whitewins: 2, Blackwins: 6, draws: 2

depth: 3, previous moves: ['W, f4', 'B, d5'], move: W b3, counted: 6, Whitewins: 1, Blackwins: 3, draws: 2

depth: 3, previous moves: ['W, f4', 'B, d5'], move: W Nf3, counted: 2, Whitewins: 1, Blackwins: 1, draws: 0

depth: 3, previous moves: ['W, f4', 'B, d5'], move: W g3, counted: 2, Whitewins: 0, Blackwins: 2, draws: 0

depth: 2, previous moves: ['W, f4'], move: B g6, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, f4', 'B, g6'], move: W e4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, f4'], move: B e5, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, f4', 'B, e5'], move: W fxe5, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 2, previous moves: ['W, f4'], move: B Nf6, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, f4', 'B, Nf6'], move: W b3, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 1, previous moves: [], move: W d4, counted: 862, Whitewins: 232, Blackwins: 87, draws: 543

depth: 2, previous moves: ['W, d4'], move: B Nf6, counted: 553, Whitewins: 154, Blackwins: 57, draws: 342

depth: 3, previous moves: ['W, d4', 'B, Nf6'], move: W c4, counted: 473, Whitewins: 133, Blackwins: 50, draws: 290

depth: 3, previous moves: ['W, d4', 'B, Nf6'], move: W Nf3, counted: 48, Whitewins: 12, Blackwins: 3, draws: 33

depth: 3, previous moves: ['W, d4', 'B, Nf6'], move: W Bg5, counted: 13, Whitewins: 2,

Blackwins: 2, draws: 9

depth: 3, previous moves: ['W, d4', 'B, Nf6'], move: W c3, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, d4', 'B, Nf6'], move: W Bf4, counted: 10, Whitewins: 4, Blackwins: 1, draws: 5

depth: 3, previous moves: ['W, d4', 'B, Nf6'], move: W g3, counted: 3, Whitewins: 1, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, d4', 'B, Nf6'], move: W Nc3, counted: 4, Whitewins: 2, Blackwins: 1, draws: 1

depth: 2, previous moves: ['W, d4'], move: B d5, counted: 237, Whitewins: 55, Blackwins: 19, draws: 163

depth: 3, previous moves: ['W, d4', 'B, d5'], move: W c4, counted: 193, Whitewins: 47, Blackwins: 16, draws: 130

depth: 3, previous moves: ['W, d4', 'B, d5'], move: W Nf3, counted: 26, Whitewins: 3, Blackwins: 1, draws: 22

depth: 3, previous moves: ['W, d4', 'B, d5'], move: W Bf4, counted: 10, Whitewins: 3, Blackwins: 1, draws: 6

depth: 3, previous moves: ['W, d4', 'B, d5'], move: W e4, counted: 4, Whitewins: 1, Blackwins: 1, draws: 2

depth: 3, previous moves: ['W, d4', 'B, d5'], move: W Nc3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, d4', 'B, d5'], move: W Bg5, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 2, previous moves: ['W, d4'], move: B g6, counted: 16, Whitewins: 5, Blackwins: 4, draws: 7

depth: 3, previous moves: ['W, d4', 'B, g6'], move: W c4, counted: 5, Whitewins: 2, Blackwins: 0, draws: 3

depth: 3, previous moves: ['W, d4', 'B, g6'], move: W e4, counted: 11, Whitewins: 3, Blackwins: 4, draws: 4

depth: 2, previous moves: ['W, d4'], move: B e6, counted: 14, Whitewins: 5, Blackwins: 2, draws: 7

depth: 3, previous moves: ['W, d4', 'B, e6'], move: W c4, counted: 6, Whitewins: 2,

Blackwins: 1, draws: 3

depth: 3, previous moves: ['W, d4', 'B, e6'], move: W e4, counted: 8, Whitewins: 3, Blackwins: 1, draws: 4

depth: 2, previous moves: ['W, d4'], move: B Nc6, counted: 4, Whitewins: 2, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, d4', 'B, Nc6'], move: W c4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, d4', 'B, Nc6'], move: W e4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, d4'], move: B f5, counted: 24, Whitewins: 6, Blackwins: 4, draws: 14

depth: 3, previous moves: ['W, d4', 'B, f5'], move: W g3, counted: 12, Whitewins: 4, Blackwins: 1, draws: 7

depth: 3, previous moves: ['W, d4', 'B, f5'], move: W c4, counted: 4, Whitewins: 0, Blackwins: 0, draws: 4

depth: 3, previous moves: ['W, d4', 'B, f5'], move: W Bg5, counted: 4, Whitewins: 1, Blackwins: 2, draws: 1

depth: 3, previous moves: ['W, d4', 'B, f5'], move: W d5, counted: 2, Whitewins: 1, Blackwins: 1, draws: 0

depth: 3, previous moves: ['W, d4', 'B, f5'], move: W Nc3, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 2, previous moves: ['W, d4'], move: B c5, counted: 4, Whitewins: 2, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, d4', 'B, c5'], move: W d5, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, d4', 'B, c5'], move: W e3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, d4'], move: B d6, counted: 6, Whitewins: 2, Blackwins: 1, draws: 3

depth: 3, previous moves: ['W, d4', 'B, d6'], move: W Nf3, counted: 6, Whitewins: 2, Blackwins: 1, draws: 3

depth: 2, previous moves: ['W, d4'], move: B b6, counted: 2, Whitewins: 0, Blackwins: 0,

draws: 2

depth: 3, previous moves: ['W, d4', 'B, b6'], move: W e4, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 2, previous moves: ['W, d4'], move: B c6, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, d4', 'B, c6'], move: W Nf3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 1, previous moves: [], move: W e4, counted: 1240, Whitewins: 345, Blackwins: 149, draws: 746

depth: 2, previous moves: ['W, e4'], move: B c5, counted: 618, Whitewins: 166, Blackwins: 92, draws: 360

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W Nf3, counted: 524, Whitewins: 151, Blackwins: 77, draws: 296

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W f4, counted: 8, Whitewins: 1, Blackwins: 0, draws: 7

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W Nc3, counted: 32, Whitewins: 5, Blackwins: 11, draws: 16

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W c3, counted: 32, Whitewins: 6, Blackwins: 3, draws: 23

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W d4, counted: 10, Whitewins: 2, Blackwins: 1, draws: 7

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W h3, counted: 4, Whitewins: 0, Blackwins: 0, draws: 4

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W b4, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W Ne2, counted: 4, Whitewins: 0, Blackwins: 0, draws: 4

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W d3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, e4'], move: B e6, counted: 114, Whitewins: 37, Blackwins: 10, draws: 67

depth: 3, previous moves: ['W, e4', 'B, e6'], move: W d4, counted: 106, Whitewins: 35,

Blackwins: 10, draws: 61

depth: 3, previous moves: ['W, e4', 'B, e6'], move: W Qe2, counted: 4, Whitewins: 1, Blackwins: 0, draws: 3

depth: 3, previous moves: ['W, e4', 'B, e6'], move: W Nc3, counted: 4, Whitewins: 1, Blackwins: 0, draws: 3

depth: 2, previous moves: ['W, e4'], move: B e5, counted: 305, Whitewins: 79, Blackwins: 27, draws: 199

depth: 3, previous moves: ['W, e4', 'B, e5'], move: W Nf3, counted: 271, Whitewins: 73, Blackwins: 23, draws: 175

depth: 3, previous moves: ['W, e4', 'B, e5'], move: W Nc3, counted: 4, Whitewins: 1, Blackwins: 0, draws: 3

depth: 3, previous moves: ['W, e4', 'B, e5'], move: W f4, counted: 10, Whitewins: 1, Blackwins: 1, draws: 8

depth: 3, previous moves: ['W, e4', 'B, e5'], move: W Bc4, counted: 12, Whitewins: 3, Blackwins: 2, draws: 7

depth: 3, previous moves: ['W, e4', 'B, e5'], move: W Qh5, counted: 2, Whitewins: 0, Blackwins: 1, draws: 1

depth: 3, previous moves: ['W, e4', 'B, e5'], move: W d4, counted: 4, Whitewins: 1, Blackwins: 0, draws: 3

depth: 3, previous moves: ['W, e4', 'B, e5'], move: W d3, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 2, previous moves: ['W, e4'], move: B c6, counted: 122, Whitewins: 37, Blackwins: 10, draws: 75

depth: 3, previous moves: ['W, e4', 'B, c6'], move: W d4, counted: 96, Whitewins: 29, Blackwins: 7, draws: 60

depth: 3, previous moves: ['W, e4', 'B, c6'], move: W c4, counted: 12, Whitewins: 2, Blackwins: 1, draws: 9

depth: 3, previous moves: ['W, e4', 'B, c6'], move: W Nf3, counted: 6, Whitewins: 3, Blackwins: 0, draws: 3

depth: 3, previous moves: ['W, e4', 'B, c6'], move: W Nc3, counted: 4, Whitewins: 1, Blackwins: 1, draws: 2

depth: 3, previous moves: ['W, e4', 'B, c6'], move: W d3, counted: 4, Whitewins: 2,

Blackwins: 1, draws: 1

depth: 2, previous moves: ['W, e4'], move: B g6, counted: 25, Whitewins: 9, Blackwins: 5, draws: 11

depth: 3, previous moves: ['W, e4', 'B, g6'], move: W d4, counted: 21, Whitewins: 9, Blackwins: 4, draws: 8

depth: 3, previous moves: ['W, e4', 'B, g6'], move: W Nc3, counted: 4, Whitewins: 0, Blackwins: 1, draws: 3

depth: 2, previous moves: ['W, e4'], move: B Nf6, counted: 14, Whitewins: 6, Blackwins: 1, draws: 7

depth: 3, previous moves: ['W, e4', 'B, Nf6'], move: W e5, counted: 10, Whitewins: 5, Blackwins: 0, draws: 5

depth: 3, previous moves: ['W, e4', 'B, Nf6'], move: W Nc3, counted: 4, Whitewins: 1, Blackwins: 1, draws: 2

depth: 2, previous moves: ['W, e4'], move: B d6, counted: 19, Whitewins: 7, Blackwins: 3, draws: 9

depth: 3, previous moves: ['W, e4', 'B, d6'], move: W d4, counted: 17, Whitewins: 6, Blackwins: 3, draws: 8

depth: 3, previous moves: ['W, e4', 'B, d6'], move: W Nc3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, e4'], move: B Nc6, counted: 3, Whitewins: 1, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, e4', 'B, Nc6'], move: W d4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, e4', 'B, Nc6'], move: W Nf3, counted: 1, Whitewins: 0, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, e4'], move: B d5, counted: 16, Whitewins: 2, Blackwins: 1, draws: 13

depth: 3, previous moves: ['W, e4', 'B, d5'], move: W exd5, counted: 14, Whitewins: 2, Blackwins: 1, draws: 11

depth: 3, previous moves: ['W, e4', 'B, d5'], move: W Nc3, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 2, previous moves: ['W, e4'], move: B b6, counted: 2, Whitewins: 0, Blackwins: 0,

draws: 2

depth: 3, previous moves: ['W, e4', 'B, b6'], move: W d4, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 2, previous moves: ['W, e4'], move: B a6, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, e4', 'B, a6'], move: W d4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 1, previous moves: [], move: W c4, counted: 206, Whitewins: 57, Blackwins: 25, draws: 124

depth: 2, previous moves: ['W, c4'], move: B e5, counted: 77, Whitewins: 18, Blackwins: 10, draws: 49

depth: 3, previous moves: ['W, c4', 'B, e5'], move: W g3, counted: 26, Whitewins: 6, Blackwins: 3, draws: 17

depth: 3, previous moves: ['W, c4', 'B, e5'], move: W Nc3, counted: 47, Whitewins: 11, Blackwins: 7, draws: 29

depth: 3, previous moves: ['W, c4', 'B, e5'], move: W d3, counted: 4, Whitewins: 1, Blackwins: 0, draws: 3

depth: 2, previous moves: ['W, c4'], move: B e6, counted: 17, Whitewins: 1, Blackwins: 2, draws: 14

depth: 3, previous moves: ['W, c4', 'B, e6'], move: W Nf3, counted: 8, Whitewins: 1, Blackwins: 1, draws: 6

depth: 3, previous moves: ['W, c4', 'B, e6'], move: W Nc3, counted: 5, Whitewins: 0, Blackwins: 0, draws: 5

depth: 3, previous moves: ['W, c4', 'B, e6'], move: W g3, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, c4', 'B, e6'], move: W e3, counted: 2, Whitewins: 0, Blackwins: 1, draws: 1

depth: 2, previous moves: ['W, c4'], move: B Nf6, counted: 53, Whitewins: 18, Blackwins: 6, draws: 29

depth: 3, previous moves: ['W, c4', 'B, Nf6'], move: W Nf3, counted: 6, Whitewins: 1, Blackwins: 1, draws: 4

depth: 3, previous moves: ['W, c4', 'B, Nf6'], move: W Nc3, counted: 43, Whitewins: 16,

Blackwins: 5, draws: 22

depth: 3, previous moves: ['W, c4', 'B, Nf6'], move: W d4, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, c4', 'B, Nf6'], move: W g3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, c4'], move: B c5, counted: 25, Whitewins: 8, Blackwins: 2, draws: 15

depth: 3, previous moves: ['W, c4', 'B, c5'], move: W Nf3, counted: 10, Whitewins: 3, Blackwins: 1, draws: 6

depth: 3, previous moves: ['W, c4', 'B, c5'], move: W g3, counted: 3, Whitewins: 1, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, c4', 'B, c5'], move: W Nc3, counted: 12, Whitewins: 4, Blackwins: 1, draws: 7

depth: 2, previous moves: ['W, c4'], move: B c6, counted: 12, Whitewins: 3, Blackwins: 2, draws: 7

depth: 3, previous moves: ['W, c4', 'B, c6'], move: W Nf3, counted: 4, Whitewins: 2, Blackwins: 2, draws: 0

depth: 3, previous moves: ['W, c4', 'B, c6'], move: W d4, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, c4', 'B, c6'], move: W e4, counted: 6, Whitewins: 1, Blackwins: 0, draws: 5

depth: 2, previous moves: ['W, c4'], move: B g6, counted: 14, Whitewins: 5, Blackwins: 2, draws: 7

depth: 3, previous moves: ['W, c4', 'B, g6'], move: W d4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, c4', 'B, g6'], move: W g3, counted: 2, Whitewins: 1, Blackwins: 1, draws: 0

depth: 3, previous moves: ['W, c4', 'B, g6'], move: W e4, counted: 4, Whitewins: 0, Blackwins: 0, draws: 4

depth: 3, previous moves: ['W, c4', 'B, g6'], move: W Nc3, counted: 6, Whitewins: 3, Blackwins: 1, draws: 2

depth: 2, previous moves: ['W, c4'], move: B f5, counted: 6, Whitewins: 3, Blackwins: 1,

draws: 2

depth: 3, previous moves: ['W, c4', 'B, f5'], move: W g3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, c4', 'B, f5'], move: W Nc3, counted: 2, Whitewins: 1, Blackwins: 1, draws: 0

depth: 3, previous moves: ['W, c4', 'B, f5'], move: W d4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, c4'], move: B b6, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, c4', 'B, b6'], move: W d4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 1, previous moves: [], move: W Nf3, counted: 239, Whitewins: 60, Blackwins: 23, draws: 156

depth: 2, previous moves: ['W, Nf3'], move: B c5, counted: 36, Whitewins: 9, Blackwins: 5, draws: 22

depth: 3, previous moves: ['W, Nf3', 'B, c5'], move: W b3, counted: 4, Whitewins: 1, Blackwins: 1, draws: 2

depth: 3, previous moves: ['W, Nf3', 'B, c5'], move: W g3, counted: 6, Whitewins: 1, Blackwins: 0, draws: 5

depth: 3, previous moves: ['W, Nf3', 'B, c5'], move: W e4, counted: 8, Whitewins: 2, Blackwins: 1, draws: 5

depth: 3, previous moves: ['W, Nf3', 'B, c5'], move: W c4, counted: 18, Whitewins: 5, Blackwins: 3, draws: 10

depth: 2, previous moves: ['W, Nf3'], move: B d5, counted: 82, Whitewins: 16, Blackwins: 9, draws: 57

depth: 3, previous moves: ['W, Nf3', 'B, d5'], move: W d4, counted: 36, Whitewins: 9, Blackwins: 2, draws: 25

depth: 3, previous moves: ['W, Nf3', 'B, d5'], move: W b3, counted: 4, Whitewins: 0, Blackwins: 1, draws: 3

depth: 3, previous moves: ['W, Nf3', 'B, d5'], move: W g3, counted: 28, Whitewins: 4, Blackwins: 4, draws: 20

depth: 3, previous moves: ['W, Nf3', 'B, d5'], move: W c4, counted: 8, Whitewins: 1,

Blackwins: 2, draws: 5

depth: 3, previous moves: ['W, Nf3', 'B, d5'], move: W Nc3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, Nf3', 'B, d5'], move: W a3, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, Nf3', 'B, d5'], move: W e3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, Nf3'], move: B Nf6, counted: 106, Whitewins: 27, Blackwins: 8, draws: 71

depth: 3, previous moves: ['W, Nf3', 'B, Nf6'], move: W c4, counted: 74, Whitewins: 18, Blackwins: 4, draws: 52

depth: 3, previous moves: ['W, Nf3', 'B, Nf6'], move: W g3, counted: 24, Whitewins: 7, Blackwins: 3, draws: 14

depth: 3, previous moves: ['W, Nf3', 'B, Nf6'], move: W d4, counted: 6, Whitewins: 2, Blackwins: 1, draws: 3

depth: 3, previous moves: ['W, Nf3', 'B, Nf6'], move: W e3, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 2, previous moves: ['W, Nf3'], move: B f5, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, Nf3', 'B, f5'], move: W d3, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, Nf3'], move: B g6, counted: 7, Whitewins: 4, Blackwins: 0, draws: 3

depth: 3, previous moves: ['W, Nf3', 'B, g6'], move: W e4, counted: 5, Whitewins: 3, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, Nf3', 'B, g6'], move: W c4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, Nf3'], move: B e6, counted: 2, Whitewins: 1, Blackwins: 1, draws: 0

depth: 3, previous moves: ['W, Nf3', 'B, e6'], move: W d4, counted: 2, Whitewins: 1, Blackwins: 1, draws: 0

depth: 2, previous moves: ['W, Nf3'], move: B Nc6, counted: 2, Whitewins: 1, Blackwins: 0,

draws: 1

depth: 3, previous moves: ['W, Nf3', 'B, Nc6'], move: W c4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 2, previous moves: ['W, Nf3'], move: B d6, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 3, previous moves: ['W, Nf3', 'B, d6'], move: W c4, counted: 2, Whitewins: 1, Blackwins: 0, draws: 1

depth: 1, previous moves: [], move: W Nc3, counted: 8, Whitewins: 2, Blackwins: 3, draws: 3

depth: 2, previous moves: ['W, Nc3'], move: B c5, counted: 6, Whitewins: 1, Blackwins: 2, draws: 3

depth: 3, previous moves: ['W, Nc3', 'B, c5'], move: W f4, counted: 6, Whitewins: 1, Blackwins: 2, draws: 3

depth: 2, previous moves: ['W, Nc3'], move: B d5, counted: 2, Whitewins: 1, Blackwins: 1, draws: 0

depth: 3, previous moves: ['W, Nc3', 'B, d5'], move: W e4, counted: 2, Whitewins: 1, Blackwins: 1, draws: 0

depth: 1, previous moves: [], move: W g3, counted: 18, Whitewins: 3, Blackwins: 0, draws: 15

depth: 2, previous moves: ['W, g3'], move: B e5, counted: 8, Whitewins: 1, Blackwins: 0, draws: 7

depth: 3, previous moves: ['W, g3', 'B, e5'], move: W c4, counted: 4, Whitewins: 1, Blackwins: 0, draws: 3

depth: 3, previous moves: ['W, g3', 'B, e5'], move: W Bg2, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 3, previous moves: ['W, g3', 'B, e5'], move: W d4, counted: 2, Whitewins: 0, Blackwins: 0, draws: 2

depth: 2, previous moves: ['W, g3'], move: B d5, counted: 10, Whitewins: 2, Blackwins: 0, draws: 8

depth: 3, previous moves: ['W, g3', 'B, d5'], move: W Nf3, counted: 4, Whitewins: 1, Blackwins: 0, draws: 3

depth: 3, previous moves: ['W, g3', 'B, d5'], move: W Bg2, counted: 6, Whitewins: 1,

Blackwins: 0, draws: 5

depth: 1, previous moves: [], move: W b4, counted: 4, Whitewins: 1, Blackwins: 1, draws: 2

depth: 2, previous moves: ['W, b4'], move: B e5, counted: 4, Whitewins: 1, Blackwins: 1, draws: 2

depth: 3, previous moves: ['W, b4', 'B, e5'], move: W Bb2, counted: 4, Whitewins: 1, Blackwins: 1, draws: 2

depth: 1, previous moves: [], move: W b3, counted: 5, Whitewins: 1, Blackwins: 1, draws: 3

depth: 2, previous moves: ['W, b3'], move: B d5, counted: 5, Whitewins: 1, Blackwins: 1, draws: 3

depth: 3, previous moves: ['W, b3', 'B, d5'], move: W Bb2, counted: 5, Whitewins: 1, Blackwins: 1, draws: 3

depth: 1, previous moves: [], move: W d3, counted: 2, Whitewins: 0, Blackwins: 1, draws: 1

depth: 2, previous moves: ['W, d3'], move: B g6, counted: 2, Whitewins: 0, Blackwins: 1, draws: 1

depth: 3, previous moves: ['W, d3', 'B, g6'], move: W Nd2, counted: 2, Whitewins: 0, Blackwins: 1, draws: 1

Moves up to count 300

depth: 1, previous moves: [], move: W d4, counted: 862, Whitewins: 232, Blackwins: 87, draws: 543

depth: 2, previous moves: ['W, d4'], move: B Nf6, counted: 553, Whitewins: 154, Blackwins: 57, draws: 342

depth: 3, previous moves: ['W, d4', 'B, Nf6'], move: W c4, counted: 473, Whitewins: 133, Blackwins: 50, draws: 290

depth: 1, previous moves: [], move: W e4, counted: 1240, Whitewins: 345, Blackwins: 149, draws: 746

depth: 2, previous moves: ['W, e4'], move: B c5, counted: 618, Whitewins: 166, Blackwins: 92, draws: 360

depth: 3, previous moves: ['W, e4', 'B, c5'], move: W Nf3, counted: 524, Whitewins: 151, Blackwins: 77, draws: 296

depth: 2, previous moves: ['W, e4'], move: B e5, counted: 305, Whitewins: 79, Blackwins: 27, draws: 199