Project x Readme Team aberchel

Version 1 9/11/24

A single copy of this template should be filled out and submitted with each project submission, regardless of the number of students on the team. It should have the name readme_"teamname" Also change the title of this template to "Project x Readme Team xxx"

<table>
<tr><td>1</td><td>Team Name: aberchel</td></tr>
<tr><td>2</td><td>Team members names and netids: August Berchelmann, netid: aberchel</td></tr>
<tr><td>3</td><td>Overall project attempted, with sub-projects: 2SAT Solver</td></tr>
<tr><td>4</td><td>Overall success of the project: Very Successful</td></tr>
<tr><td>5</td><td>Approximately total time (in hours) to complete: 5</td></tr>
<tr><td>6</td><td>Link to github repository: https://github.com/BopItFreak/2SATSolver</td></tr>
<tr><td>7</td><td>List of included files (if you have many files of a certain type, such as test files of different sizes, list just the folder): (Add more rows as necessary). Add more rows as necessary.
<table>
<tr><td>File/folder Name</td><td>File Contents and Use</td></tr>
<tr><td colspan="2">Code Files</td></tr>
<tr><td>2SATSolver_aberchel.js</td><td>2SAT Solver containing the DPLL algorithm</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="2">Test Files</td></tr>
<tr><td>check_aberchel.csv</td><td>Contains verified test cases</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="2">Output Files</td></tr>
<tr><td colspan="2">output_aberchel.json Contains the output of data_aberchel.csv processed through 2SATSolver_aberchel.js</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="2">Plots (as needed)</td></tr>
<tr><td colspan="2">plot_aberchel.png plot of the points with the x as number of variables and y as execution time</td></tr>
<tr><td></td><td></td></tr>
</table></td></tr>
<tr><td>8</td><td>Programming languages used, and associated libraries: JavaScript (using fast-csv library), python (using matplotlib library)</td></tr>
</table>

9	Key data structures (for each sub-project): the sats array contains all the sats imported from the data_aberchel.csv data file.
10	General operation of code (for each subproject) The code contains many different functions which the main DPLLExec function uses.
11	What test cases you used/added, why you used them, what did they tell you about the correctness of your code. I used check_aberchel.csv to check my code. It's the first 10 cases of the data_aberchel.csv file, but verified manually by me using an online SAT solver.
12	How you managed the code development I put different tasks in different functions to efficiently organize my code. I developed this code over two days.
13	Detailed discussion of results: The output_aberchel.csv contains my results. It includes an JSON object containing the Satisfiability/Unsatisfiability, the number of variables, the execution time, and the number of clauses for each SAT in the data_aberchel.csv file. The plot clearly shows the exponential relation between adding more variables and execution time.
14	How team was organized I did the entire project
15	What you might do differently if you did the project again I would probably try to research the algorithm a little better before starting to write code, as I kind of figured it out as I went which was inefficient.
16	Any additional material: