

Ethan Paffe

N00963396

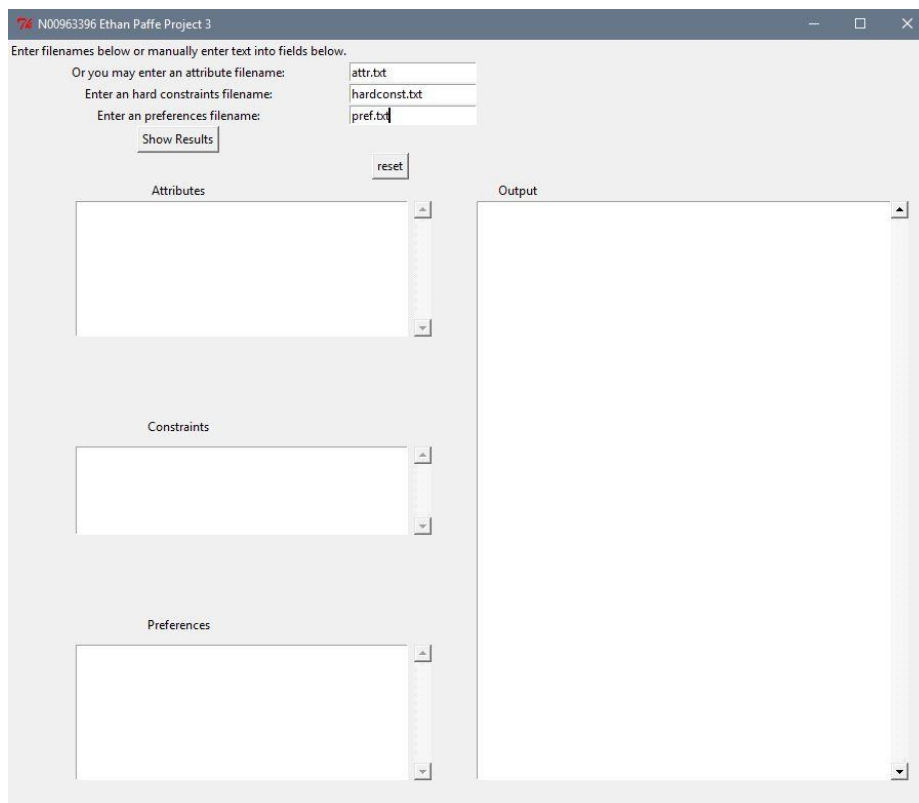
Project 3

3/22/2019

This program functions by parsing the given input, assigning positive and negative values respectively to each attribute, and building a CNF in the format appropriate for CLASP. The interface is designed to be as simple to use as possible and the output is made to be clearly understandable to even inexperienced users. The program then takes the output from CLASP for the hard constraints and plugs the answers into CLASP, summing respective values for each attribute combination that meets the preference constraints, to find the most preferable combination(s).

The testing and results are shown below:

1. The program is run and filenames are entered into the appropriate fields.



2. Show results is pressed and file contents are shown on the left and results are shown on the right. 1. Shows if the given problem has a solution, 2. Shows preference of one answer set over the other, 3. Displays an optimal solution, and 4. Shows all optimal solutions.

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Enter filenames below or manually enter text into fields below.

Or you may enter an attribute filename:

Enter an hard constraints filename:

Enter an preferences filename:

**Attributes**

appetizer1: bread, salad  
appetizer2: soup, dumplings  
entree1: beef, chicken  
entree2: salmon, lobster  
drink1: beer, coke  
drink2: water, wine  
dessert1: cake, ice-cream  
dessert2: cookie, tea

**Constraints**

NOT bread OR NOT cake  
soup OR beer  
NOT salmon OR cake  
NOT cake OR NOT beer  
NOT soup OR beef

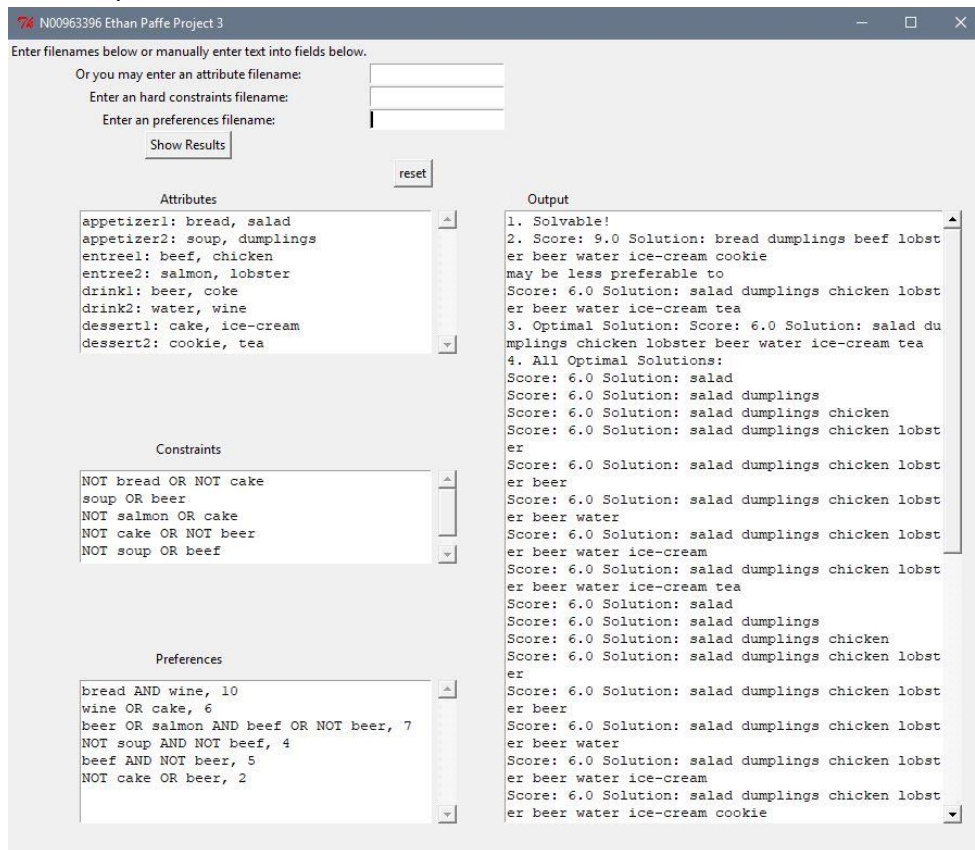
**Preferences**

bread AND wine, 10  
wine OR cake, 6  
beer OR salmon AND beef OR NOT beer, 7  
NOT soup AND NOT beef, 4  
beef AND NOT beer, 5  
NOT cake OR beer, 2

**Output**

1. Solvable!  
2. Score: 9.0 Solution: bread dumplings beef lobster beer water ice-cream cookie  
may be less preferable to  
Score: 6.0 Solution: salad dumplings chicken lobster beer water ice-cream tea  
3. Optimal Solution: Score: 6.0 Solution: salad dumplings chicken lobster beer water ice-cream tea  
4. All Optimal Solutions:  
Score: 6.0 Solution: salad  
Score: 6.0 Solution: salad dumplings  
Score: 6.0 Solution: salad dumplings chicken  
Score: 6.0 Solution: salad dumplings chicken lobster  
er  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream tea  
Score: 6.0 Solution: salad  
Score: 6.0 Solution: salad dumplings  
Score: 6.0 Solution: salad dumplings chicken  
Score: 6.0 Solution: salad dumplings chicken lobster  
er  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream cookie

### 3. Reset is pressed and the filename fields are cleared.



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Enter filenames below or manually enter text into fields below.

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Enter an preferences filename:

Show Results

reset

Attributes

appetizer1: bread, salad  
appetizer2: soup, dumplings  
entree1: beef, chicken  
entree2: salmon, lobster  
drink1: beer, coke  
drink2: water, wine  
dessert1: cake, ice-cream  
dessert2: cookie, tea

Constraints

NOT bread OR NOT cake  
soup OR beer  
NOT salmon OR cake  
NOT cake OR NOT beer  
NOT soup OR beer

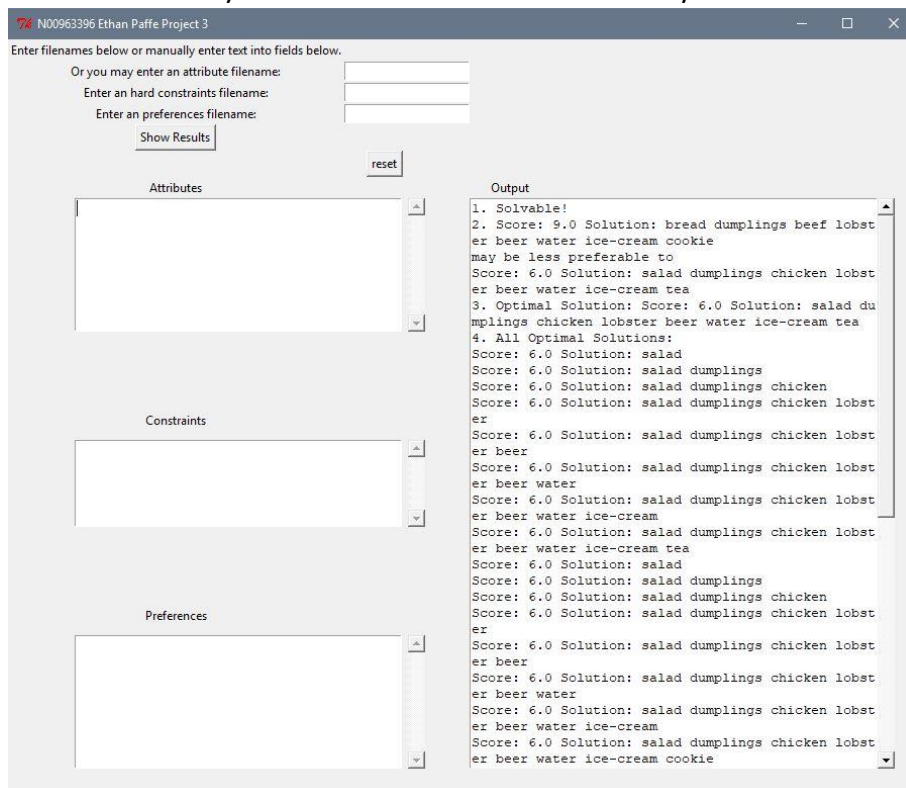
Preferences

bread AND wine, 10  
wine OR cake, 6  
beer OR salmon AND beef OR NOT beer, 7  
NOT soup AND NOT beef, 4  
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Output

1. Solvable!  
2. Score: 9.0 Solution: bread dumplings beef lobster beer water ice-cream cookie  
may be less preferable to  
Score: 6.0 Solution: salad dumplings chicken lobster beer water ice-cream tea  
3. Optimal Solution: Score: 6.0 Solution: salad dumplings chicken lobster beer water ice-cream tea  
4. All Optimal Solutions:  
Score: 6.0 Solution: salad  
Score: 6.0 Solution: salad dumplings  
Score: 6.0 Solution: salad dumplings chicken  
Score: 6.0 Solution: salad dumplings chicken lobster  
er  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream tea  
Score: 6.0 Solution: salad  
Score: 6.0 Solution: salad dumplings  
Score: 6.0 Solution: salad dumplings chicken  
Score: 6.0 Solution: salad dumplings chicken lobster  
er  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream cookie

### 4. The manual entry fields are cleared for manual entry



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Enter filenames below or manually enter text into fields below.

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Enter an preferences filename:

Show Results

reset

Attributes

Constraints

Preferences

Output

1. Solvable!  
2. Score: 9.0 Solution: bread dumplings beef lobster beer water ice-cream cookie  
may be less preferable to  
Score: 6.0 Solution: salad dumplings chicken lobster beer water ice-cream tea  
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Score: 6.0 Solution: salad  
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er beer  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream tea  
Score: 6.0 Solution: salad  
Score: 6.0 Solution: salad dumplings  
Score: 6.0 Solution: salad dumplings chicken  
Score: 6.0 Solution: salad dumplings chicken lobster  
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Score: 6.0 Solution: salad dumplings chicken lobster  
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Score: 6.0 Solution: salad dumplings chicken lobster  
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Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream cookie

5. Note the lack of filenames in the top fields, testing data has been entered manually and show results is pressed to obtain the same solutions as the testing data is the same as the file contents; confirming that the program is functional using both entry methods.

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Enter an hard constraints filename:

Enter an preferences filename:

Show Results

reset

Attributes

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drink1: beer, coke  
drink2: water, wine  
dessert1: cake, ice-cream  
dessert2: cookie, tea

Constraints

NOT bread OR NOT cake  
soup OR beer  
NOT salmon OR cake  
NOT cake OR NOT beer  
NOT soup OR beef

Preferences

bread AND wine, 10  
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Output

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Score: 6.0 Solution: salad  
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Score: 6.0 Solution: salad dumplings chicken lobster  
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Score: 6.0 Solution: salad dumplings chicken lobster  
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er beer water ice-cream  
Score: 6.0 Solution: salad dumplings chicken lobster  
er beer water ice-cream cookie