Cryptarithmetic Problem

Prerequisites

- Python must be installed on your system. The program is tested with Python 3.12.x.
- No additional libraries are required outside of the Python Standard Library.

Program Files

- `main.py` - The main program file.
- `Input1.txt`, `Input2.txt` - The input files containing the cryptarithmetic problems.
- `Output1.txt`, `Output2.txt` - The output files containing the solutions to the cryptarithmetic problems.

Running the Program

1. Place the `main.py` script and the input files in the same directory.
2. Open a terminal or command line interface.
3. Change the directory to where the script and input files are located with `cd path/to/directory`.
4. Execute the script by running the command: `python3 main.py`.

Running custom files

1. To run your own puzzles, put them in the file and name it as you like.
2. Demonstration of the script is presented in the end of the source code in the block:

```
if __name__ == "__main__":
    for input_file, output_file in [
        ("Input1.txt", "Output1.txt"),
        ("Input2.txt", "Output2.txt"),
    ]:
        data = IO.read(input_file)
        assignment = BacktrackingSearch.search(CSP(data))
        IO.write(data, assignment, output_file)
```

Expected Output

- The program will read the data from the input files.
- It will process the data and solve the cryptarithmetic puzzles.
- The solutions will be written to the output files.
- The output files will be created in the same directory as the script.

Solution Files

- `Output1.txt`
- `Output2.txt`

Source Code

Please refer to the `main.py` file for the full source code. The code is commented for clarity and understanding of the logic used.

Input

```
SEND
MORE
MONEY
```

Output

```
9567
1085
10652
```

Input

```
BASE
BALL
GAMES
```

Output

```
7483
7455
14938
```