**HOMEWORK9 Report**

**Overview**

This C program simulates a game where a botanist searches for rare flowers in a forest. As the botanist roams the forest, they collect flowers with a water bottle, following certain rules.

**File Structure**

- **main.c**: This is the main file of the program. Functions are called here, and the basic flow of the game is managed here.
- **init.txt**: This file defines the initial state of the game.
- **final.txt**: This file saves the final state of the game.

**Definitions and Structures**

- **Forest** structure: Represents the forest. It contains information such as the size of the forest, the position of flowers, and their count.
- **Botanist** structure: Represents the botanist. Their position and the size of the water bottle are stored here.

**Functions**

1. **fixComma**: Replaces commas in the forest with spaces.
2. **init_game**: Initializes the game. Reads the initial state from the **init.txt** file and initializes the forest and the botanist.
3. **display_forest**: Prints the forest and the botanist to the screen.
4. **search**: Handles the botanist's movements. It takes input from the user and allows the botanist to move accordingly.
5. **write_to_file**: Writes the final state of the game to the **final.txt** file.

**Workflow**

1. In the **main** function, the game is initialized (**init_game**), then the botanist's movement in the forest is managed (**search**), and finally, the final state is written to the **final.txt** file (**write_to_file**).

Below are some of the outputs:

```
ahmet@Ahmet-MacBook-Pro HOMEWORK9 % ./main
19,10
1,0,100
T T T T T T T T T T
B       T T       T
T   T         T   T
T   T T T T   T   T
T X T         T T T
T   T   T         T
T   T   T T T T T T
T   T             T
T   T T T T   T   T
T     T   T X T T T
T   T         T   T
T   T T T T   T   T
T   T         T T T
T   T X T         T
T   T   T T T T T T
T   T             T
T   T   T T   T   T
T X       T X T T T
T T T T T T T T T T

please enter the move:
```

```
please enter the move: s
T T T T T T T T T T
- -     T T       T
T - T           T   T
T B T T T T     T   T
T X T           T T T
T   T   T           T
T   T   T T T T T T
T   T               T
T   T T T T     T   T
T     T   T X T T T
T   T           T   T
T   T T T T     T   T
T   T           T T T
T   T X T           T
T   T   T T T T T T
T   T               T
T   T   T T     T   T
T X       T X T T T
T T T T T T T T T T
collected flower number -> 0
not used bottle number -> 100

please enter the move: s
I've found it!
T T T T T T T T T T
- -     T T       T
T - T           T   T
T - T T T T     T   T
T B T           T T T
T   T   T           T
T   T   T T T T T T
T   T               T
T   T T T T     T   T
T     T   T X T T T
T   T           T   T
T   T T T T     T   T
T   T           T T T
T   T X T           T
T   T   T T T T T T
T   T               T
T   T   T T     T   T
T X       T X T T T
T T T T T T T T T T
collected flower number -> 1
not used bottle number -> 99

please enter the move:
```

```
please enter the move: w
I've found it!
T T T T T T T T T T
- -     T T       T
T - T           T   T
T - T T T T     T   T
T - T           T T T
T - T   T           T
T - T   T T T T T T
T - T               T
T - T T T T     T   T
T -   T     T B T T T
T - T         - T   T
T - T T T T - T     T
T - T - - - - T T T
T - T - T           T
T - T - T T T T T T
T - T - - - -       T
T - T - T T - T     T
T - - - - T - T T T
T T T T T T T T T T
collected flower number -> 5
not used bottle number -> 95
ahmet@Ahmet-MacBook-Pro HOMEWORK9 %
```

final.txt

```
19,10
9,6,95
T T T T T T T T T T
- -     T T       T
T - T           T   T
T - T T T T     T   T
T - T           T T T
T - T   T           T
T - T   T T T T T T
T - T               T
T - T T T T     T   T
T -   T     T B T T T
T - T         - T   T
T - T T T T - T     T
T - T - - - - T T T
T - T - T           T
T - T - T T T T T T
T - T - - - -       T
T - T - T T - T     T
T - - - - T - T T T
T T T T T T T T T T
```