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Data Structures and Algorithm II Project 2

User's Manual

Setup and Compilation

1. **Download and Unzip Submission**
    - Download and unzip the canvas submission.
    - The submission will include the following files:
        - `adjacency.hpp`
        - `adjacency.cpp`
        - `BF.hpp`
        - `BF.cpp`
        - `GA.hpp`
        - `GA.cpp`
        - `main.cpp`
        - Makefile
        - UML
        - Excel File
        - Test folder containing:
            - `test/adjacency-test1.cpp`
            - `test/BF-test1.cpp`
            - `test/GA-test1.cpp`
2. **Environment**
    - This program has been tested in a multiplatform lab and is compatible with various systems.
3. **Compiling**
    - The project includes a Makefile to facilitate the build process. Use the following commands:
        - To run tests:
            - `make run-test`
        - To run the main program:
            - `make run-main`
        - To clean the directory:
            - `make clean`
        -
4. **Running the Program**

    - Ensure that all `-test1` files are located in the `test` folder.
    - All `.hpp`, `.cpp` files should be outside of the `test` folder.
    - The program requires user interaction to input values.
5. **Input Prompt**

   When running the program, you will be prompted to enter the following values:

   ```
   Enter number of cities:
   Enter number of initial tours for GA:
   Enter number of generations for GA:
   Enter mutation rate (0-100):
   ```

6. **Output**

The output will be displayed in the console, similar to the following format:

```
Running algorithms for 10 cities...

Running Brute Force algorithm...
Elapsed time: 0.00 seconds
Running Genetic Algorithm...
Elapsed time: 0.00 seconds
Results:
----------------------------------------
Cities: 10

Brute Force:
  Optimal cost: 419.8
  Time taken: 1.0 seconds

Genetic Algorithm:
  Cost found: 650.4
  Time taken: 0.1 seconds
```

Additional Notes

- Make sure to have the necessary development tools installed to compile the code, such as a C++ compiler (like g++).
- If you encounter any errors during compilation or execution, verify that all files are in the correct directories and properly named.
- For any questions or feedback regarding the project, please feel free to reach out!