***User Guide for the Assembler***

**1.Prerequisites**

- Java17 or later version installed.

- Java Runtime Environment (JRE) or Java Development Kit (JDK) installed.

- Text file with assembly instructions prepared.

**2.Usage**

- Open your command line interface.

- Navigate to the directory where Assembler program is located.

- Execute the program by simply click on the run.jar file or

- Type in **java -jar run.jar**

This will start the Assembler program.

**3. Input File**: By default, the Assembler expects a file named `test case.txt` in the same directory. Ensure your instruction file is named correctly or update the filename in the `run` method of the Assembler class before compiling.

**4. Output File**: The Assembler will generate two files:

- `ListingFile.txt`: This file contains a list of the processed instructions along with their original lines.

- `LoadFile.txt`: This file contains the processed instructions ready for loading into memory.

**5.Detailed Function Descriptions**

- \*\*loadDict\*\*: Initializes the opcode to binary and register to binary mappings.

- \*\*readFile\*\*: Reads assembly instructions from the input file.

- \*\*BinaryToOctal\*\*: Converts binary strings to their octal representation.

- \*\*formatAndConvertInstruction\*\*: Formats the instruction components and converts them to octal.

- \*\*handleMiscellaneousInstruction\*\* and other `handle` methods: Process different types of assembly instructions.

- \*\*parse\*\*: Parses the instructions, categorizes them, and converts them to the output format.

- \*\*writeListingFile\*\*: Writes the detailed listing of instructions to a file.

- \*\*writeLoadFile\*\*: Writes the load-ready instructions to a file.

- \*\*cleanup\*\*: Cleans up the load file by removing blank lines.

- \*\*run\*\*: Orchestrates the reading, parsing, and writing of instructions.

- \*\*main\*\*: The entry point to run the Assembler program.

## Troubleshooting

- \*\*Missing Input File\*\*: If the program cannot find the input file, check the filename and path.

- \*\*Output Files Not Generated\*\*: Make sure you have write permissions in the directory.

- \*\*Java Exception\*\*: If you encounter a Java exception, check that your Java version matches the version used to compile the Assembler class.