ANSI TERMINAL-BASED SPREADSHEET PROGRAM

The **ANSI Terminal-Based Spreadsheet Program** is a terminal-based application designed for managing tabular data, performing calculations, and saving/loading data in CSV format. This section provides step-by-step instructions on using the program, including navigating the interface, entering data, and working with files.

1. STARTING THE PROGRAM

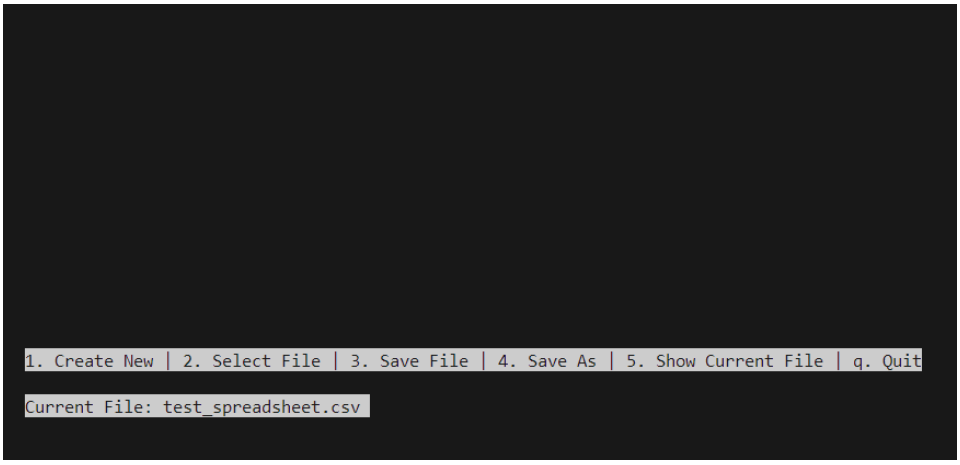

Figure 1 Main Menu

Run the executable in a terminal. The program will start in the main menu.

The main menu options are displayed at the bottom of the screen, with commands mapped to specific keys.

Command	Description
1	**Create New Spreadsheet**: Initializes a new spreadsheet with default size.
2	**Select File**: Load an existing spreadsheet from a CSV file.
3	**Save File**: Save the current spreadsheet to the existing file.
4	**Save As**: Save the spreadsheet under a new file name.
5	**Show Current File**: Display the name of the currently loaded file.
q	**Quit**: Exit the program.

Spreadsheet Navigation

Figure 2 Spreadsheet Navigation

Once inside the spreadsheet view, you can navigate and edit cells.

Key	**Action**
Key	Action
↑ or U (Arrow Up)	Move to the cell above.
↓ or D (Arrow Down)	Move to the cell below.
← or L (Arrow Left)	Move to the cell on the left.
→ or R(Arrow Right)	Move to the cell on the right.
Enter	Enter/exit editing mode for the selected cell.
q	Return to the main menu in spreadsheet.

2. EDITING CELLS

1. Select the desired cell using the arrow keys and you can directly change cell content.
2. Press Enter to enter for disable editing mode.
3. Type your data:
    - **Numbers:** Enter numeric values (e.g., 123, 45.67).
    - **Labels:** Enter plain text strings (e.g., Revenue, Expenses).
    - **Formulas:** Use cell references and arithmetic operators (e.g., =A1 + B2 - C3).
4. Press Enter again to save changes and exit editing mode.
5. If you want to turn main page for file operations press “q”

Supported Formulas:

- **Basic Arithmetic:** Addition (+), subtraction (-), multiplication (*), and division (/).
- **Built-in Functions:**
    - SUM: Calculate the total of a range (e.g., SUM(A1..A10)).
    - AVER: Compute the average (e.g., AVER(A1..A5)).
    - STDDEV: Calculate standard deviation (e.g., STDDEV(B1..B10)).
    - MAX: Find the maximum value (e.g., MAX(C1..C10)).
    - MIN: Find the minimum value (e.g., MIN(D1..D10)).

Saving and Loading Files

- **Save File (3):**
  - Saves the current spreadsheet to the previously loaded or created file.
  - Displays a confirmation message upon success.
- **Save As (4):**
  - Prompts you to enter a new file name.
  - Saves the spreadsheet to the specified file.
- **Load File (2):**
  - Prompts you to enter the name of an existing CSV file.
  - Displays a success or failure message based on the file's validity.

3. EXAMPLE COMMANDS

This section provides detailed, step-by-step examples to help users understand how to use the program effectively for common tasks. Each example demonstrates a specific functionality of the program.

Example 1: Basic Data Entry

1. Navigate to the cell **A1** using the arrow keys.
2. Press `Enter` to activate editing mode.
3. Type `100` and press `Enter` again to save the value in **A1**.
4. Move to the cell **B1** and press `Enter` to activate editing mode.
5. Type `=A1 + 50` and press `Enter`.
   - The program will calculate `A1 + 50`, and the value `150` will be displayed in **B1**.
6. If you change the value in **A1** to `200`, the value in **B1** will automatically update to `250`.

Example 2: Using Functions

1. Enter the following values in column **C**:
   - **C1:** `10`
   - **C2:** `20`
   - **C3:** `30`
   - **C4:** `40`
   - **C5:** `50`
2. Move to the cell **D1** and enter the formula `SUM(C1..C5)`:
   - The program will calculate the sum of the values in **C1** through **C5** and display `150` in **D1**.
3. Navigate to **D2** and enter `AVER(C1..C5)`:
   - The program will calculate the average of the range and display `30`.
4. For standard deviation, move to **D3** and enter `STDDEV(C1..C5)`:
   - The result will display the standard deviation of the values.

Example 3: Working with Labels

1. Navigate to cell **E1** and type `Revenue`.
    - The cell will display `Revenue` as a label, and the type will be shown as `(L)` in the top-line display.
2. Move to **F1** and type `Expenses`.
3. Navigate to **G1** and enter `=E1 + F1`:
    - The program will display an error (`Error: Non-numeric value`) because labels cannot be used in arithmetic operations.

Example 4: Saving and Loading Files

1. Press `4` in the main menu to use the **Save As** feature.
2. Enter a filename, e.g., `budget.csv`, and save the spreadsheet.
    - A confirmation message will appear: `File saved successfully`.
3. To test file loading:
    - Press `2` to load a file and enter the filename `budget.csv`.
    - The spreadsheet will load with the saved values and formulas.

A test file named test.csv has been provided. You can find it in the project directory.