Building a Calculator with Java

Simple calculator application using Java.

Focus on GUI, event handling, arithmetic operations.

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Topic : Calculator

Organization : Micro IT

GUI Design with Swing

- JFrame: main application window

- JTextField: input/output display

- JButton: numeric and operation keys

- GridLayout: button layout manager

- Example: **JFrame frame = new JFrame("Calculator");**

- Example: JTextField display = new JTextField();
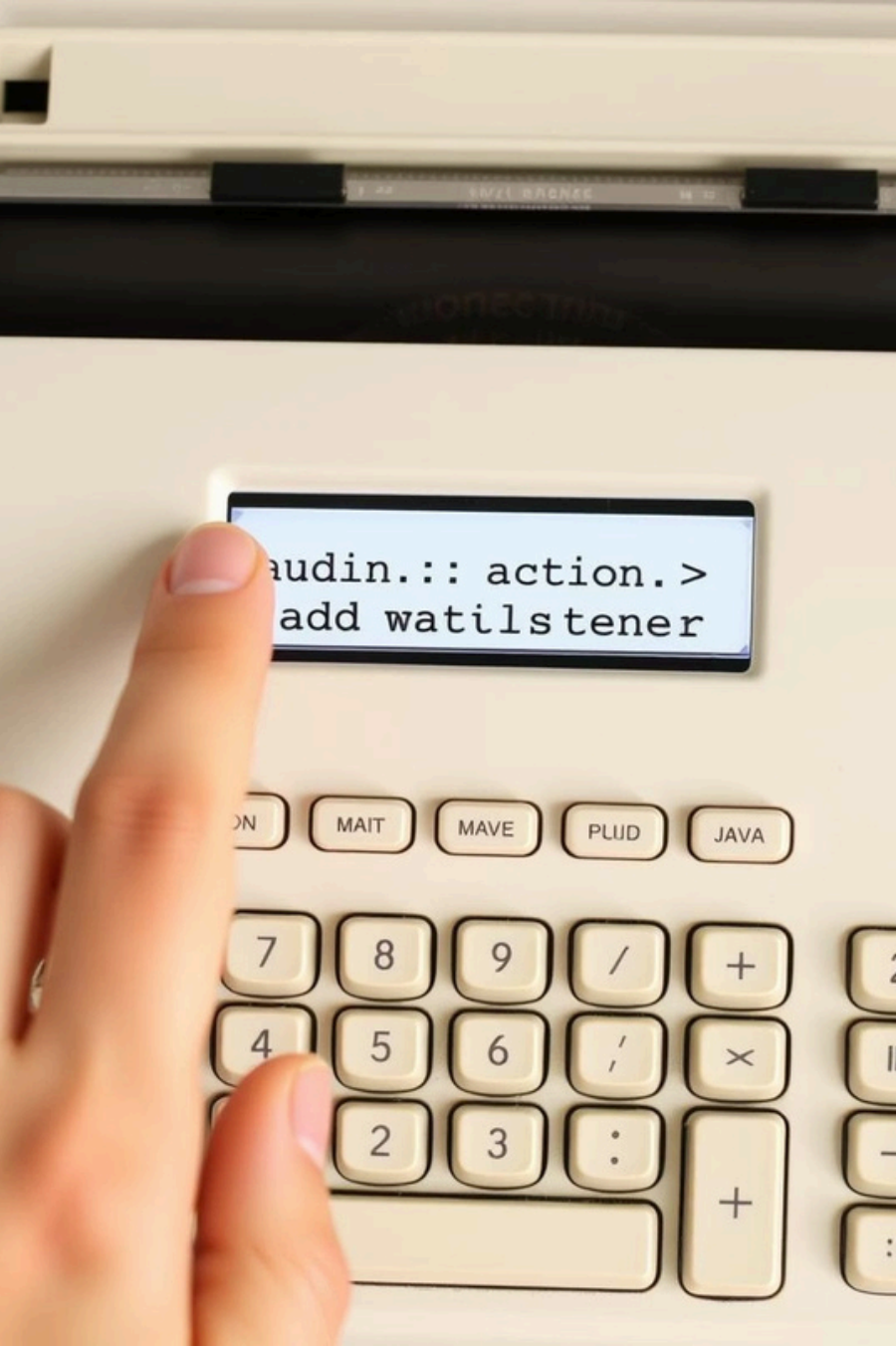
Event Handling

☐ **ActionListener Interface**
Detect button presses
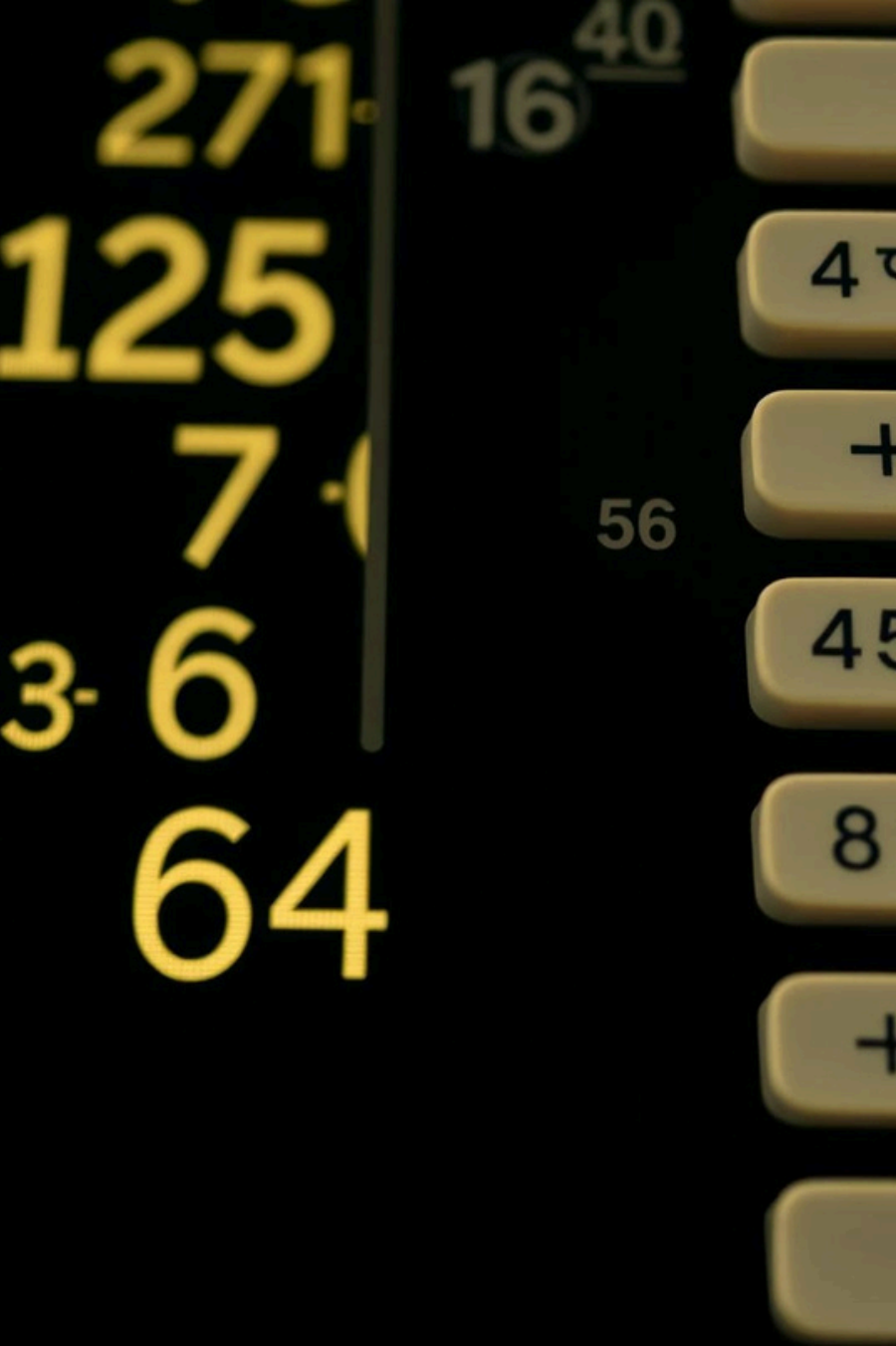
☐ **ActionEvent Object**
Identifies clicked button

☐ **Lambda Expressions**
Compact event handling

☐ **Example Code**
button.addActionListener(e -> // Handle click);

Calculation Logic

Basic Operations
Add, Subtract, Multiply, Divide methods

Operand Storage
Keep track of operands and operator

Input Parsing
Convert display text to numbers safely

Error Handling
Handle division by zero and invalid input

Code Implementation

1 **Key Methods**
Add clear, input append, and calculation logic

2 **Main Method**
Program entry point and GUI initialization

3 **Best Practices**
Organize code modularly and use clear variable names

4 **Example**
Clear button resets display and stored values

Conclusion and Improvements

- Add scientific functions (sin, cos, sqrt)
- Implement memory and history features
- Refactor for maintainability

- Explore JavaFX for modern GUI
- Use design patterns for cleaner code
- Find tutorials and documentation online