Debugging Fundamentals

- Understanding the debugging process
- Setting breakpoints
- Inspecting variables and data
- Plus shortcuts to use at each step — all using **STS on Windows**

Simple Java Debug Example

Code: DebugDemo.java

```
public class DebugDemo {
    public static void main(String[] args) {
        int a = 5;
        int b = 10;
        int result = addNumbers(a, b);
        System.out.println("Result: " + result);
    }

    public static int addNumbers(int x, int y) {
        int sum = x + y;
        return sum;
    }
}
```

Debugging Process Step-by-Step

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1. Set a Breakpoint

Where: Set a breakpoint at this line inside **addNumbers** method:

int sum = x + y;

Shortcut:

- **Ctrl + Shift + B → Toggle breakpoint**

You'll see a blue dot on the left margin.

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2. Start Debug Mode

How:

- Right-click the file → Debug As → Java Application
  Shortcut:
- **F11** → Debug current app
- **F8** → Resume program

When it hits the breakpoint, execution **pauses**.

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3. Inspect Variables

- Hover over x, y, or sum to see values.
- Or view them in the **Variables tab** (bottom panel).

Debugging Fundamentals

Shortcut:

- **Ctrl + Shift + I → Inspect selected variable**

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4. Step Through the Code

Action	Shortcut	What it Does
Step Over	F6	Runs current line, goes to next
Step Into	F5	Enters into method call
Step Return	F7	Exits current method
Resume	F8	Runs until next breakpoint

Try **F5** on **addNumbers(...)** and it will jump inside that method.

Output (after debugging):

Result: 15