

# Java Programming Notes

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September 12th, 2024

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## 1 Topics for This Week

- Variables and Console
- Assignment Statements
- Naming Conventions
- Data Types and Operators
- Numeric Type Casting

## 2 Client Request: Truss Goodman

### Initial Requirements:

- Input shingle cost, roof size, and installation cost.
- Calculate taxes and output the total before and after taxes.

### Steps to Implement:

1. Allow user input for shingle cost.
2. Allow user input for roof size (in square feet).
3. Allow user input for installation cost (per square foot).
4. Add a named constant for relevant taxes.
5. Calculate totals (before and after taxes).
6. Output the totals to the console.

## 3 Java Input: Scanner Class

**Step 1-3:** Using the Scanner class for user input:

- Import the Scanner class: `import java.util.Scanner;`
- Create a new scanner object: `Scanner input = new Scanner(System.in);`
- Store input in variables using `input.nextDouble()` for numeric input.

## 4 Testing the Program

- Compile and run the program.
- Input values for shingle cost, roof size, and installation cost.
- Verify output before and after taxes.

## 5 Variable Naming Conventions

### Camel Case:

- Variables should be named using camel case, e.g., `thisIsCamelCase`.

### Named Constants:

- Constants should be named in uppercase.
- Example: `final double HST = 1.13;`

## 6 Final Output and Client Feedback

- The final output includes totals before and after taxes.
- Potential future changes for client needs.

## 7 Creating a New Java Project: SimpleCalculator

### Steps:

1. Create a new project in IntelliJ with SDK 1.8.
2. Create a new Java class: `SimpleCalculator`.
3. Use `System.out.println()` to display options.

### Example Code:

```
System.out.println("Welcome to the calculator app");
System.out.println("1) Perform Multiplication");
System.out.println("2) Perform Division");
System.out.println("3) Perform Subtraction");
System.out.println("4) Perform Addition");
System.out.println("5) Perform Modulus");
System.out.println("Please Select A Number:");
```

## 8 Error Types

- **Syntax Errors:** Errors in code structure (e.g., missing braces).
- **Logic Errors:** Code executes but produces incorrect results.
- **Runtime Errors:** Occur when unexpected input is provided.

## 9 Homework

- Read pages 120-148 of the textbook.

## 10 Next Week's Topics

- Boolean Data Types
- Selection Structures (if, if-else statements)
- Boolean Conditions
- Relational Operators
- Math Library - Random Numbers
- Logic Operators
- Conditional Expressions