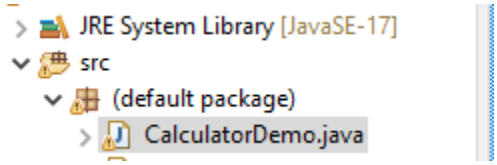
TASK 2

1.Project Structure



2. Source Code

```
import java.util.Scanner;

/*

 * Task 2: Variables, Data Types & Console Input

 */


public class CalculatorDemo {

    // Static variable (shared across all objects)

    static String appName = "Console Calculator";


    // Instance variable (belongs to object)

    int instanceCounter = 0;


    public static void main(String[] args) {


        // Local variables (inside method)

        byte b = 10;            // 1 byte

        short s = 100;          // 2 bytes

        int i = 1000;           // 4 bytes

        long l = 100000L;       // 8 bytes
```

```
float f = 10.5f;        // 4 bytes
double d = 99.99;       // 8 bytes
char c = 'A';           // 2 bytes
boolean flag = true;    // 1 bit (logical)

System.out.println("=== " + appName + " ===");

// Scanner for console input
Scanner sc = new Scanner(System.in);

// Accepting user input
System.out.print("Enter first number: ");
double num1 = sc.nextDouble();

System.out.print("Enter second number: ");
double num2 = sc.nextDouble();

System.out.print("Choose operation (+ - * /): ");
char operator = sc.next().charAt(0);

double result = 0;
boolean valid = true;

// Arithmetic operations with validation
switch (operator) {
```

```
        case '+':
            result = num1 + num2;
            break;

        case '-':
            result = num1 - num2;
            break;

        case '*':
            result = num1 * num2;
            break;

        case '/':
            if (num2 != 0) {
                result = num1 / num2;
            } else {
                System.out.println("Error: Division by zero not allowed.");
                valid = false;
            }
            break;

        default:
            System.out.println("Invalid operator selected.");
            valid = false;
    }
```

```
        // Formatted output
        if (valid) {
            System.out.printf("Result: %.2f %c %.2f = %.2f%n",
                    num1, operator, num2, result);
        }

        // Type casting examples
        int castedInt = (int) d;   // Explicit casting
        double autoCast = i;       // Implicit casting

        System.out.println("\nType Casting Examples:");
        System.out.println("Double to int: " + castedInt);
        System.out.println("Int to double: " + autoCast);

        sc.close();
    }
}
```

3.Console Input & Output