Core java

1. Hello World Program

```
public class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello, World!");
    }
}
```

2. Simple Calculator

```
import java.util.Scanner;

public class SimpleCalculator {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter first number: ");
        double num1 = scanner.nextDouble();
        System.out.print("Enter second number: ");
        double num2 = scanner.nextDouble();
        System.out.print("Choose operation (+, -, *, /): ");
        char op = scanner.next().charAt(0);
        double result;

        switch (op) {
            case '+': result = num1 + num2; break;
            case '-': result = num1 - num2; break;
            case '*': result = num1 * num2; break;
            case '/':
                if (num2 == 0) {
                    System.out.println("Error: Division by zero");
                    return;
                }
                result = num1 / num2;
                break;
            default:
                System.out.println("Invalid operation");
                return;
        }
        System.out.println("Result: " + result);
    }
}
```

Core java

3. Even or Odd Checker

```
import java.util.Scanner;

public class EvenOddChecker {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter an integer: ");
        int num = scanner.nextInt();

        if (num % 2 == 0)
            System.out.println("Even");
        else
            System.out.println("Odd");
    }
}
```

4. Leap Year Checker

```
import java.util.Scanner;

public class LeapYearChecker {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a year: ");
        int year = scanner.nextInt();

        if ((year % 4 == 0 && year % 100 != 0) || year % 400 == 0)
            System.out.println("Leap year");
        else
            System.out.println("Not a leap year");
    }
}
```

5. Multiplication Table

```
import java.util.Scanner;

public class MultiplicationTable {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = scanner.nextInt();
```

```
        for (int i = 1; i <= 10; i++) {
            System.out.println(num + " x " + i + " = " + (num * i));
        }
    }
}
```

6. Data Type Demonstration

```
public class DataTypeDemo {
    public static void main(String[] args) {
        int age = 25;
        float height = 5.9f;
        double salary = 55000.75;
        char grade = 'A';
        boolean isActive = true;

        System.out.println("Age: " + age);
        System.out.println("Height: " + height);
        System.out.println("Salary: " + salary);
        System.out.println("Grade: " + grade);
        System.out.println("Active: " + isActive);
    }
}
```

7. Type Casting Example

```
public class TypeCastingExample {
    public static void main(String[] args) {
        double d = 9.78;
        int i = (int) d;

        int j = 100;
        double d2 = j;

        System.out.println("Double to int: " + i);
        System.out.println("Int to double: " + d2);
    }
}
```

Core java

8. Operator Precedence

```
public class OperatorPrecedence {
    public static void main(String[] args) {
        int result = 10 + 5 * 2;
        System.out.println("Result: " + result); // 20 because * has higher precedence than +
    }
}
```

9. Grade Calculator

```
import java.util.Scanner;

public class GradeCalculator {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter marks (0–100): ");
        int marks = scanner.nextInt();

        if (marks >= 90) System.out.println("Grade: A");
        else if (marks >= 80) System.out.println("Grade: B");
        else if (marks >= 70) System.out.println("Grade: C");
        else if (marks >= 60) System.out.println("Grade: D");
        else System.out.println("Grade: F");
    }
}
```

10. Number Guessing Game

```
import java.util.Scanner;
import java.util.Random;

public class NumberGuessingGame {
    public static void main(String[] args) {
        Random rand = new Random();
        Scanner scanner = new Scanner(System.in);
        int target = rand.nextInt(100) + 1;
        int guess;

        do {
            System.out.print("Guess a number (1-100): ");
            guess = scanner.nextInt();
```

```
            if (guess < target)
               System.out.println("Too low!");
            else if (guess > target)
               System.out.println("Too high!");
            else
               System.out.println("Correct!");
         } while (guess != target);
      }
}
```