Assignment-1

1.Create a Java program that acts as a simple calculator.

- The program should prompt the user to enter two numbers and an operator (+, -, *,/).
- Perform the corresponding calculation based on the operator.
- Handle potential exceptions, such as division by zero or invalid operator input.
- Display the result or an appropriate error message.

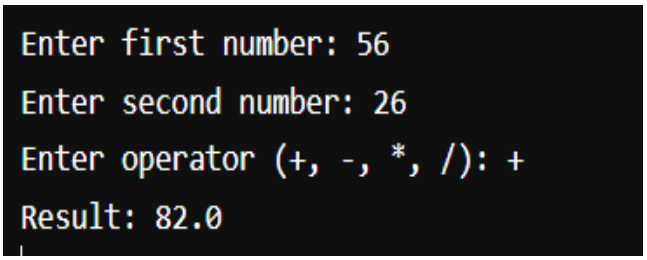
Program:

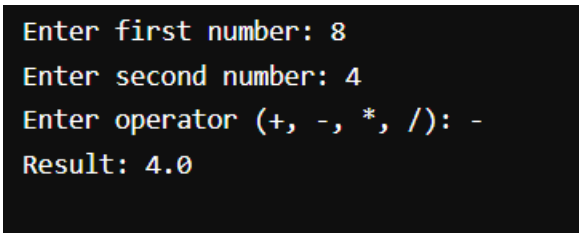
```
import java.util.Scanner;
public class SimpleCalculator {

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        try {
            // Prompt user for the first number
            System.out.print("Enter first number: ");
            double num1 = scanner.nextDouble();

            // Prompt user for the second number
            System.out.print("Enter second number: ");
            double num2 = scanner.nextDouble();

            // Prompt user for the operator
            System.out.print("Enter operator (+, -, *, /): ");
            char operator = scanner.next().charAt(0);
```

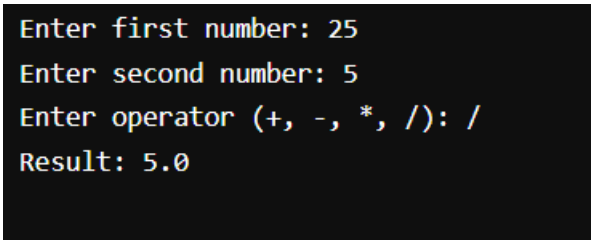
```
        double result = 0;
       // Perform the calculation based on the operator
        switch (operator) {
            case '+':
                result = num1 + num2;
                break;
            case '-':
                result = num1 - num2;
                break;
            case '*':
                result = num1 * num2;
                break;
            case '/':
                if (num2 == 0) {
                    throw new ArithmeticException("Division by zero");
                }
                result = num1 / num2;
                break;
            default:
                throw new IllegalArgumentException("Invalid operator");
        }

        System.out.println("Result: " + result);
    // Display the exception for the result
      } catch (ArithmeticException e) {
        System.err.println("Error: " + e.getMessage());
      } catch (IllegalArgumentException e) {
```

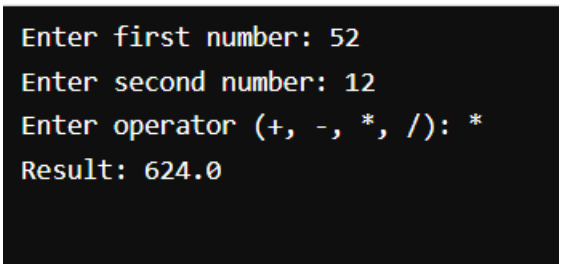
```
            System.err.println("Error: " + e.getMessage());
        } catch (Exception e) {
            System.err.println("An unexpected error occurred.");
        } finally {
            scanner.close();
        }
    }
}
```

Output:









```
Enter first number: 2
Enter second number: 0
Enter operator (+, -, *, /): /
Error:  Cannot Division by zero
```

2. Write a Java program to simulate a simple banking application.

- Create a class BankAccount with a balance and methods for deposit and withdrawal.
- Implement exception handling for withdrawal operations to prevent overdrawing.
- Handle the scenario when the withdrawal amount is greater than the balance

Program:

```
import java.util.Scanner;
public class BankAccount {

    private double balance;

// Constructor
    public BankAccount(double initialBalance) {
        this.balance = initialBalance;
    }

     // Method to deposit money
    public void deposit(double amount) {
        if (amount > 0) {
            balance += amount;
            System.out.println("Deposit successful. New balance: " + balance);
        } else {
```

```
            System.out.println("Invalid deposit amount. Must be greater than 0.");
        }
    }

    // Method to withdraw money
    public void withdraw(double amount) {
        if (amount > 0) {
            if (amount <= balance) {
                balance -= amount;
                System.out.println("Withdrawal successful. New balance: " + balance);
            } else {
                System.out.println("Insufficient funds.");
            }
        } else {
            System.out.println("Invalid withdrawal amount. Must be greater than 0.");
        }
    }

// Method to check balance
    public double getBalance() {
        return balance;
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter initial balance: ");
        double initialBalance = scanner.nextDouble();
        BankAccount account = new BankAccount(initialBalance);
```

```
int choice;
do {
    System.out.println("\n1. Deposit");
    System.out.println("2. Withdraw");
    System.out.println("3. Check Balance");
    System.out.println("4. Exit");
    System.out.print("Enter your choice: ");
    choice = scanner.nextInt();

    switch (choice) {
        case 1:
            System.out.print("Enter deposit amount: ");
            double depositAmount = scanner.nextDouble();
            account.deposit(depositAmount);
            break;
        case 2:
            System.out.print("Enter withdrawal amount: ");
            double withdrawalAmount = scanner.nextDouble();
            account.withdraw(withdrawalAmount);
            break;
        case 3:
            System.out.println("Current balance: " + account.getBalance());
            break;
        case 4:
            System.out.println("Exiting...");
            break;
        default:
            System.out.println("Invalid choice.");
    }
} while (choice != 4);
```

```
        scanner.close();
    }
}
```

Output:

```
Enter initial balance: 500
1. Deposit
2. Withdraw
3. Check Balance
4. Exit
Enter your choice: 1
Enter deposit amount: 5600
Deposit successful. New balance: 6100.0
1. Deposit
2. Withdraw
3. Check Balance
4. Exit
Enter your choice: 2
Enter withdrawal amount: 530
Withdrawal successful. New balance: 5570.0

1. Deposit
2. Withdraw
3. Check Balance
4. Exit
Enter your choice: 3
Current balance: 5570.0

1. Deposit
2. Withdraw
3. Check Balance
4. Exit
Enter your choice: 4
Exiting...
```