Problem 1 Square Root Calculation

```java
import java.util.Scanner;

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

        try {
            System.out.print("Enter a number: ");
            double number = scanner.nextDouble();

            if (number < 0) {
                throw new IllegalArgumentException("Square root of a negative number is not defined in real n
            }

            double squareRoot = Math.sqrt(number);
            System.out.println("Square root: " + squareRoot);
        } catch (Exception e) {
            System.out.println("Invalid input: " + e.getMessage());
        } finally {
            scanner.close();
        }
    }
}
```

```
input
Enter a number: -25
Invalid input: Square root of a negative number is not defined in real numbers.


...Program finished with exit code 0
Press ENTER to exit console.
```

Problem 2 ATM Withdrawal System

```java
import java.util.Scanner;

class ATM {
    private static final int PIN = 1234;
    private double balance;

    public ATM(double initialBalance) {
        this.balance = initialBalance;
    }

    public void withdraw(double amount, int enteredPin) throws Exception {
        if (enteredPin != PIN) {
            throw new Exception("Invalid PIN. Access Denied.");
        }
        if (amount > balance) {
            throw new Exception("Insufficient balance.");
        }
        balance -= amount;
        System.out.println("Withdrawal successful. Amount withdrawn: " + amount);
    }

    public void displayBalance() {
        System.out.println("Remaining balance: " + balance);
    }
}

public class ATMSystem {
    public static void main(String[] args) {
```

```
input
Enter PIN: 9789
Enter amount to withdraw: 5000
Error: Invalid PIN. Access Denied.
Remaining balance: 5000.0
```

Problem 3 University Enrollment System

```
179            try {
180                course.enrollStudent(student);
181            } catch (CourseFullException | PrerequisiteNotMetException e) {
182                System.out.println(e.getMessage());
183            }
184        } else {
185            System.out.println("Invalid student or course name.");
186        }
187    }
```

input

```
Enter the number of students: 2
Enter student name: Ananya
Enter completed courses (comma-separated, or leave blank): 1
Enter student name: Anshika
Enter completed courses (comma-separated, or leave blank): 1

Enter the number of courses: 1

Enter course code: CE203
Enter course capacity: 2
Enter prerequisites (comma-separated, or leave blank): Java

Enter the number of enrollments: 2

Enter student name: Ananya
Enter course code to enroll in: CE203
Enrollment failed: Prerequisites not met for CE203

Enter student name: Anshu
Enter course code to enroll in: 1
Invalid student or course name.


...Program finished with exit code 0
Press ENTER to exit console.
```