**Case Study: Student Enrollment System**

**Context:**

You are required to develop a console-based Student Enrollment System using Core Java. The application will allow users to manage student records and perform various business operations related to student enrollment. The application will utilize Java Collections for storing student records, implement Object-Oriented Programming principles, and include exception handling to manage potential errors.

**Requirements:**

**Features:**

1. **Add and Remove Students:**
   * Allow users to add new students to the enrollment system.
   * Allow users to remove students from the enrollment system.
2. **Update Student Details:**
   * Allow users to update details of existing students, such as name, address, and contact information.
3. **Search for Students:**
   * Allow users to search for students by name, ID, or course.
   * Display the search results with student details.
4. **Enroll and Unenroll Students in Courses:**
   * Allow users to enroll students in courses offered by the institution.
   * Allow users to unenroll students from courses.

**Classes and Objects:**

1. **Student Class:**
   * Attributes: id, name, address, contactNumber, coursesEnrolled (a list of courses enrolled by the student).
   * Methods: Constructors, getters and setters, toString method.
2. **Course Class:**
   * Attributes: id, name, instructor, schedule, capacity, studentsEnrolled (a list of students enrolled in the course).
   * Methods: Constructors, getters and setters, toString method.
3. **EnrollmentManager Class:**
   * Attributes: HashMap<Integer, Student> students, HashMap<Integer, Course> courses.
   * Methods:
     + addStudent(Student s): Adds a new student to the enrollment system.
     + removeStudent(int studentId): Removes a student from the enrollment system.
     + updateStudent(int studentId, Student updatedStudent): Updates details of an existing student.
     + searchStudent(String keyword): Searches for students based on the keyword.
     + enrollStudent(int studentId, int courseId): Enrolls a student in a course.
     + unenrollStudent(int studentId, int courseId): Unenrolls a student from a course.
     + Helper methods for input validation and exception handling.

**Deliverables:**

1. Complete source code for the Student Enrollment System.
2. Documentation including:
   * How to run the application.
   * Instructions for each feature.
   * Explanation of the exception handling implemented.
3. A brief report on the application design and how Object-Oriented principles were applied.