**Case Study: Employee Management System**

**Context:**

You are required to develop a console-based Employee Management System using Core Java. The application will allow HR administrators to manage employee records, department information, and employee-related operations. The application will utilize Java Collections for storing employee and department information, implement Object-Oriented Programming principles, and include exception handling to manage potential errors.

**Requirements:**

**Features:**

1. **Add and Remove Employees:**
   * Allow HR administrators to add new employees to the system.
   * Allow HR administrators to remove employees from the system.
2. **Update Employee Details:**
   * Allow HR administrators to update details of existing employees, such as name, designation, and salary.
3. **Add and Remove Departments:**
   * Allow HR administrators to add new departments to the system.
   * Allow HR administrators to remove departments from the system.
4. **Assign and Update Employee Department:**
   * Allow HR administrators to assign employees to departments.
   * Allow HR administrators to update employee department assignments.

**Classes and Objects:**

1. **Employee Class:**
   * Attributes: id, name, designation, salary, departmentId.
   * Methods: Constructors, getters and setters, toString method.
2. **Department Class:**
   * Attributes: id, name, description.
   * Methods: Constructors, getters and setters, toString method.
3. **EmployeeManagementSystem Class:**
   * Attributes: HashMap<Integer, Employee> employees, HashMap<Integer, Department> departments.
   * Methods:
     + addEmployee(Employee employee): Adds a new employee to the system.
     + removeEmployee(int employeeId): Removes an employee from the system.
     + updateEmployee(int employeeId, Employee updatedEmployee): Updates details of an existing employee.
     + addDepartment(Department department): Adds a new department to the system.
     + removeDepartment(int departmentId): Removes a department from the system.
     + assignEmployeeToDepartment(int employeeId, int departmentId): Assigns an employee to a department.
     + updateEmployeeDepartment(int employeeId, int newDepartmentId): Updates the department of an employee.
     + Helper methods for input validation and exception handling.

**Deliverables:**

1. Complete source code for the Employee Management 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.