

Total marks : 20

Q1 - 10 marks

Q2 - 3 marks

Q3 - 7 marks

Question 1:

You are asked to develop a simplified **Employee Management System** for a tech company using C++. The system should manage different types of employees such as **Developers** and **Managers**.

Implement the system with the following requirements:

1. Abstraction:

- Create an abstract base class `Employee` with data members: `name`, `id`, and `salary`.
- Include a pure virtual function `showDetails()` in the base class.

2. Encapsulation:

- Make the data members `name`, `id`, and `salary` **protected**.
- Provide public getter methods for each and a setter for salary.

3. Inheritance:

- Derive two classes from `Employee`: `Developer` and `Manager`.
- `Developer` should have an additional data member `programmingLanguage`.
- `Manager` should have an additional data member `teamSize`.

4. Polymorphism:

- Override the `showDetails()` method in both `Developer` and `Manager` to display relevant information.
- Use a `vector<Employee*>` in `main()` to store and display all employees.

5. Functions:

- Implement a standalone function `displayAllEmployees()` that accepts the employee list and calls `showDetails()` for each employee.

OUTPUT:

Developer: Alice
ID: 101
Salary: 100
Language: C++

Manager: Bob
ID: 102
Salary: 500
Team Size: 5

Question 2:

write a c++ program that handles exceptions, take any string as input and reverse that string.

Question 3:

Write a c++ program to extract following information from this given string.

Input

`XT900-4G_ROUTER-FIRMWARE_EU-VER_2025.05.09-RELEASE_CANDIDATE-BETA_42A1`

Output

Parsed Firmware Information:

```
-----  
Model       : XT900  
Device Type  : 4G  
Region      : EU  
Version     : 2025.05.09  
Release Stage : RELEASE CANDIDATE  
Release Type  : BETA  
Internal ID   : 42A1
```