# Software Developer case.

The solution should be develop using C# and should be returned with full source code in the correspondence repository (es)..

**Problem:**

Consider the following business rules:

* A user has: name, email, department and password
* A user can adopt one or more roles
* There is a hierarchy of roles.
* By default there are two roles:   
  Employee and Manager. Any role will also be an Employee.
* Users in a role have certain permissions
* The permissions can be: read, add, update and delete
* By default a Manager can perform all the operations
* By default an Employee can only read

The application must allow:

* Register users. Verify that there is no other user with the same email.
* Register roles. Be careful with the inheritance of roles. Don't define recursive roles.
* Assign permissions to roles
* Assign roles to users
* Determine the permissions of a user based on her roles.
* Notify the Manager that a user has been registered in their department

We will evaluate code quality, coverage of testing (Implement unit tests that cover most cases), quality of tests and correctness of the application.

The application of the SOLID principles will be taken into account. .

Additionally, the creation of a Web application to display user information and permissions will be valued.

Could you please answer these questions regarding the previous scenario?

* Could you explain which design patterns have you used and what is the purpose of them?
* If we wanted to persist that information in any storage, could you please explain which type of storage you would choose and how it looks?