Exercise 12
– Test Driven Development using JMock 2 –

Your task:

1. Write **JUnit** for the method `send(IClient sender, String message)` that should demonstrate the following functionality. `message` is sent to every client that is registered with the `Server`. That means that for each `IClient` registered with the `Server`, method `receive(IClient sender, String message)` is invoked. Be carefully to catch the behavior when `message` or `sender` are `null` - `IllegelArgumentException` is thrown. In this case, `Server` should ignore it.

2. After finishing the task 1., you should realize that the method `send(IClient sender, String message)` is not implemented, i.e. your tests do not pass. Implement this method so that it complies with the functionality described above and that all the tests written for the task 1. pass.

3. In the interface `IClient`, methods `ignore(IClient user)` and `isIgnored(IClient user)` are defined. These method are for inserting a `user` into an ignore-list and for checking whether the given `user` is ignored. Write **JUnit** tests for `send(IClient sender, String message)` that test for the following behavior: the `message` is not sent to the clients that ignore the `sender`.

4. Extend the method `send(IClient sender, String message)` so that it satisfies the behavior described in the task 3. Make sure that all your tests pass.

5. `IClient` defines a method `getBirthday()` that returns an instance of `IDate` and tells us what the birthday of a given user is. There is also a method `receiveSystemMessage(String systemMessage)` that is used for receiving messages from `Server`. Write **JUnit** tests that test the following behavior: When the method `wishHappyBirthday()` of `Server` is invoked, all the users registered with the `Server` who have their birthday on the same day as the date set on the `Server` (via `setDate(IDate date)`) should receive a system message `"Happy Birthday!!!"`.

6. Implement the method `wishHappyBirthday()` so it complies with the behavior described in the task 5. Make sure that all your tests pass.

For your convenience, the class diagram of the system is included below.

<<interface>>
IClient

+receive(sender: ICient, message: String): void throws IllegalArgumentException
+ignore(user: IClient): void
+isIgnored(user: IClient): boolean
+getBirthday(): IDate
+receiveSystemMessage(systemMessage: String): void

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<<interface>>
IDate

+getMonth(): int
+getDay(): int
+getYear(): int

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Server

+setDate(date: IDate): void throws IllegalArgumentException
+register(client: IClient): void
+deregister(client: IClient): void
+send(sender: IClient, message: String)
+wishHappyBirthday(): void