Why do we want to know which constraints of a given schedule a violated?

With rising number of user defined hard and soft constraints it becomes impossible for the scheduler to calculate an optimal solution in a sufficient time. The users might have to solve the violated constraints bei theirself. In order to help them the scheduler will point out **which constraints** are **violated** and why.

Steps:

1. Get the Schedule Score object: `SchedulerController.getInstance().getScheduleScore(Program)` or `.getCurrentScheduleScore()`
2. Retrieve the the **hard constraint** information:

    2.1 `scheduleScore.getCourseToRoomOverlap() returns a map: CourseElementInstance -> Set<CourseElementInstances>`

    The set contains those Course Element Instances which overlap with the key Course Element Instance

    2.1 `scheduleScore.getLecturerToLecturerOverlap() returns a map: Person -> Set<CourseElementInstances>`

    The set containts those Course Element Instances which the lecturer would have to give at the same time

3. Retrieve the **soft constraints** (which of course might be hard constraints too) information:

    3.1 `scheduleScore.getCourseToRoomPreference() returns a map: CourseElementInstance -> Map<ElementInstancePrefersRoom,Boolean>`

    The map contains all defined Course Element Instance prefers Room constraints and they are mapped to a boolean indicating if they are satisfied. This way no information is lost, for instance in what Room the Course Element Instance should take place. The following methods work analog.

    3.2 `scheduleScore.getCourseToFeatureRequirement() returns a map: CourseElementInstance -> Map<ElementInstanceRequiresFeature,Boolean>`

    3.3 `scheduleScore.getCourseToTimeSlotPreference() returns a map: CourseElementInstance -> Map<ElementInstancePrefersTimeSlot,Boolean>`

    3.4 `scheduleScore.getLecturerToTimeSlotPreference() returns a map: Person -> Map<PersonPrefersTimeSlot,Boolean>`

    3.5 `scheduleScore.getRoomToTimeSlotPreference() returns a map: Room -> Map<ERoomPrefersTimeSlot,Boolean>`