

Inf1B

Refactoring

Volker Seeker

School of Informatics

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Refactoring

Hockey Analysis

Game
-minutesPlayed:double -goalsAgainst:int -shotsOnGoalAgainst:int
+getGoalsAgainst():int +getShotsOnGoalAgainst():int +getMinutesPlayed():double

Season
-games:List<Game>
+addGame(Game):void +removeGame(Game):void +getGames():List<Game> +getGoalieStatistics():GoalieStatistics

GoalieStatistics
?

Implement a class to calculate goalie statistics from all games in a season.

Hockey Analysis

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$$SV\% = \frac{SOG - Goals}{SOG}$$

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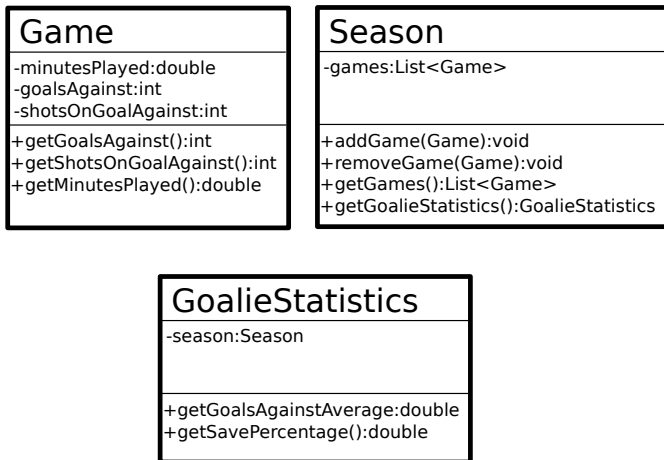
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Test Driven Development

A set of unit tests is provided to check the expected behaviour of the code.

1. implement test to check expected behaviour
2. implement feature to make test pass

Hockey Analysis



We use test driven development.

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GoalieStatistics

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GoalieStatisticsTest

We use test driven development.

Demo

Refactoring

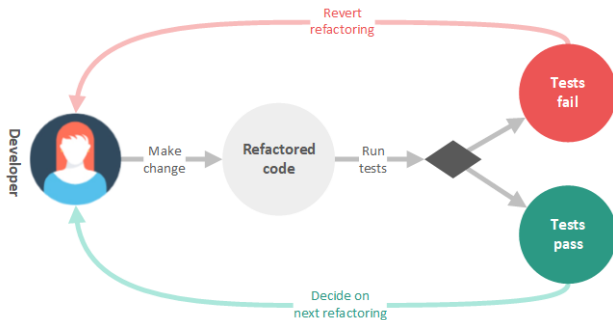
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Refactoring

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We have **refactored** the code.

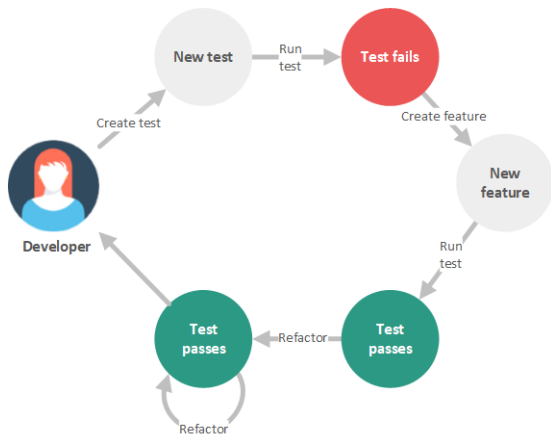
Importance of Tests



It is important that the expected behaviour of the code does not change during refactoring.

Source: <https://dzone.com/articles/what-is-refactoring>

Importance of Tests



Optimally, refactoring is part of the test driven development cycle. But this is not always possible.

Refactoring Techniques

A large catalog of standard refactoring techniques exists, for example:

- ▶ loop splitting
- ▶ method extraction
- ▶ renaming
- ▶ ...

<https://www.refactoring.com/catalog/>

Code Smell

Identify the need for refactoring based on **Warning signs** in your own code.

Code Smell

A large list of common code smells exist, for example:

- ▶ Bloaters
- ▶ Object-Orientation Abusers
- ▶ Change Preventers
- ▶ ...

<https://refactoring.guru/refactoring/smells>

Summary

- ▶ Refactoring improves the inner structure of code using small incremental steps without changing the expected behaviour
- ▶ It should be part of every development process
- ▶ With experience, you develop a nose for code smells

Reading

Books

- ▶ **Clean Code** by Robert Martin
- ▶ **Refactoring: Improving the Design of Existing Code** by Martin Fowler

Web Resources

- ▶ <https://www.refactoring.com/>
- ▶ <https://dzone.com/articles/what-is-refactoring>
- ▶ <https://refactoring.guru/>