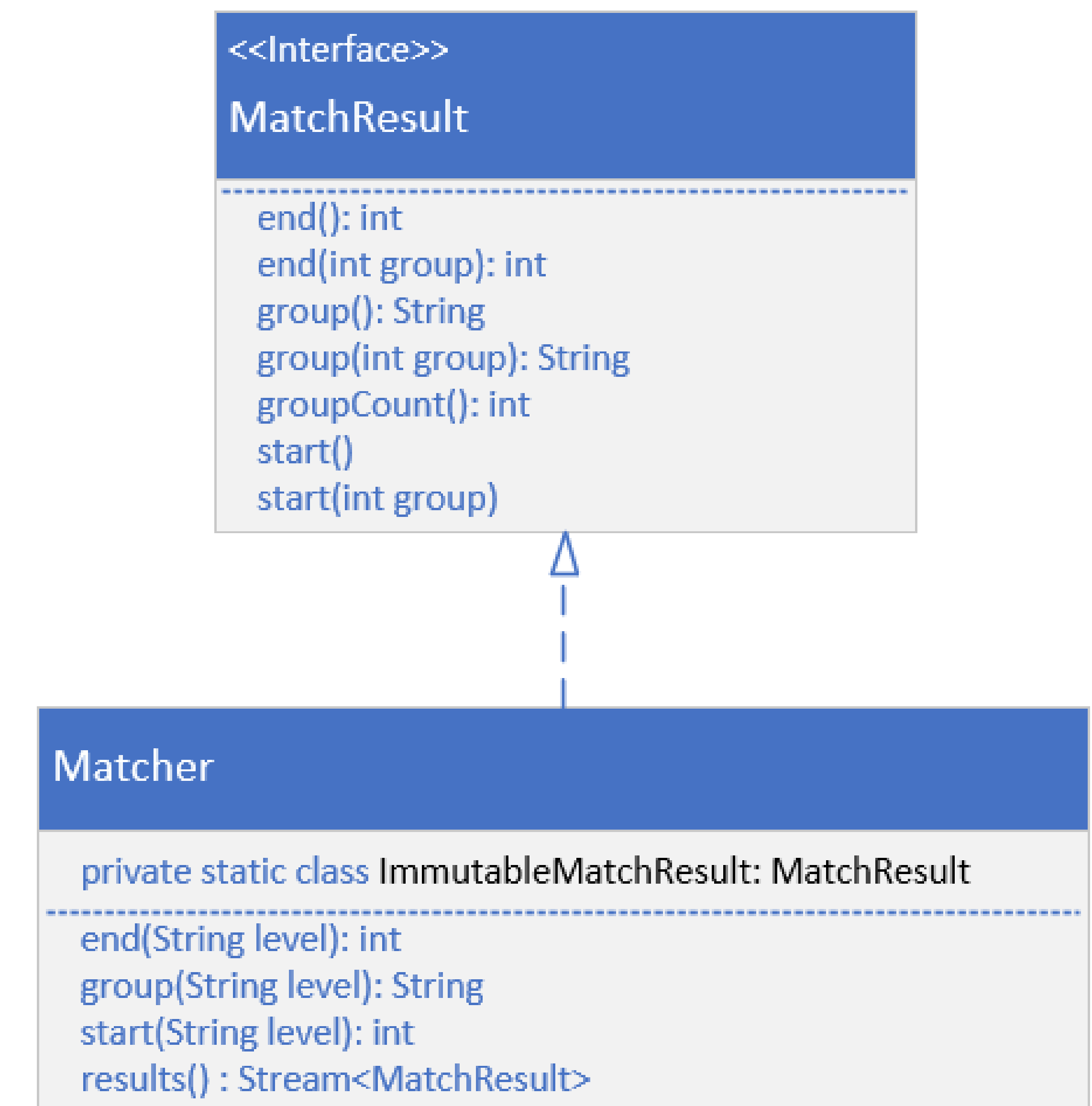# Matcher and MatchResult

The Matcher class implements MatchResult, which you can see has the end, group and start methods I reviewed with you on Matcher.

Matcher though, supports the overloaded version of these methods, which allow you to retrieve a capturing group by its name.

Note that I am only showing a few of the methods on Matcher in this particular diagram.

```
<<Interface>>
MatchResult
--------------------------------
    end(): int
    end(int group): int
    group(): String
    group(int group): String
    groupCount(): int
    start()
    start(int group)
```

```
Matcher
--------------------------------
    private static class ImmutableMatchResult: MatchResult
--------------------------------
    end(String level): int
    group(String level): String
    start(String level): int
    results() : Stream<MatchResult>
```
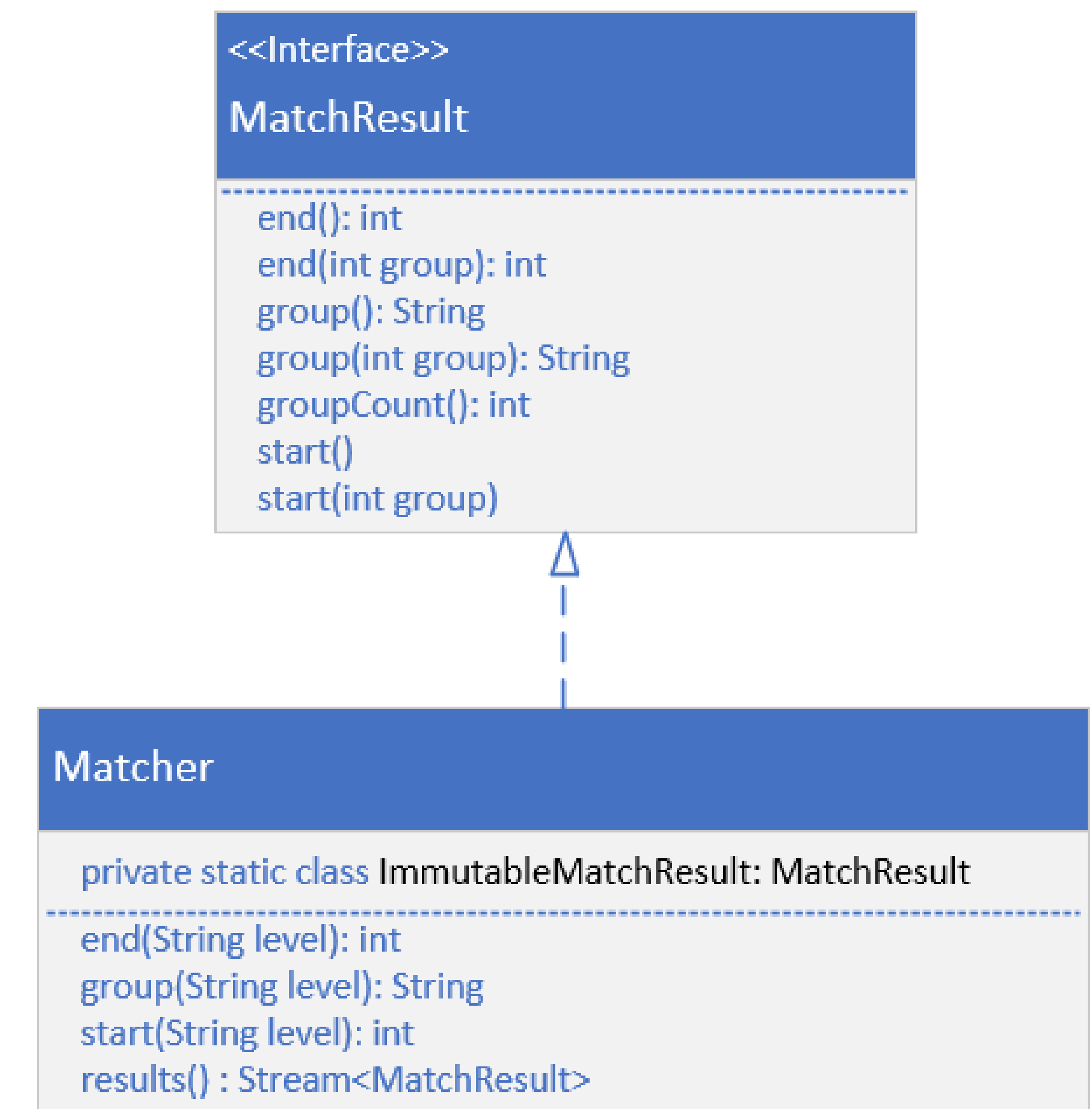
Matcher and MatchResult

When you call the results method, you'll get a stream of instances, types that also implement MatchResult.

This class is declared on Matcher as a static nested class.

The actual class isn't really important, you should just know you can use the methods shown here, declared on MatchResult.


```
<<Interface>>
MatchResult
------------------------------------
   end(): int
   end(int group): int
   group(): String
   group(int group): String
   groupCount(): int
   start()
   start(int group)
```

```
Matcher
------------------------------------
   private static class ImmutableMatchResult: MatchResult
------------------------------------
   end(String level): int
   group(String level): String
   start(String level): int
   results() : Stream<MatchResult>
```

Back References

You can use back references to refer to the text, captured by these groups, in regular expressions, and also in the replacement methods on Matcher.

In a regular expression, a back reference is identified by a backslash and a number, which is the capturing group index.

In a replacement string in Java though, a back reference starts with a $, then a number, again the grouping index.

You can also use capturing group names in back references, replacing the index with the named group.