

Advanced Pattern Matching in C#

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Agenda

- Basics - so we're on the same page
- Several real use cases from FCSlib
- Be like Haskell

Pattern Matching - C# Versions

- C# 7: `value is Type t`, also in `switch`
- C# 8: switch expressions, property, tuple, positional patterns, deconstruction
- C# 9: logical (`and`, `or`, `not`), relational (operators) and structural (parens) enhancements
- C# 10: nested property patterns
- Future, potentially: list patterns (e.g. `is [1,2,3]`)

Demo

Basic Pattern Matching

FCSlib examples

- Construct a tuple as needed to match with a positional pattern
- Replace ternary expressions?
- Combine matching methods (property and type patterns) to cover different cases efficiently
- Relational pattern to deal with `Comparer<T>`

Demo

FCSlib examples

Be like Haskell

```
data Color = R | B
```

```
data RedBlackSet a = E | T Color (RedBlackSet a) a (RedBlackSet a)
```

```
balance B (T R (T R a x b) y c) z d = T R (T B a x b) y (T B c z d)
```

```
balance B (T R a x (T R b y c)) z d = T R (T B a x b) y (T B c z d)
```

```
balance B a x (T R (T R b y c) z d) = T R (T B a x b) y (T B c z d)
```

```
balance B a x (T R b y (T R c z d)) = T R (T B a x b) y (T B c z d)
```

```
balance color a x b = T color a x b
```


Demo

Be like Haskell

Sources

- This presentation:
<https://oliversturm.github.io/advanced-pattern-matching-cs>
- PDF download:
<https://oliversturm.github.io/advanced-pattern-matching-cs/slides.pdf>
- Repository with sample code:
<https://github.com/oliversturm/advanced-pattern-matching-cs-samples>
- FCSlib: <https://github.com/oliversturm/FCSlib>

Thank You

Please feel free to contact me about the content anytime.

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