

# Software Engineering, Exercise Sheet 2

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May 7, 2009

# Exercise 1

```
new Book(new Author("Benjamin",
"Pierce")).getAuthorLastName()
→ [E-InvkNew] mbody(getAuthorLastName, Book) = this.author.lastName
new Book(new Author("Benjamin",
"Pierce")).author.lastName
→ [E-ProjNew,E-Field]
new Author("Benjamin", "Pierce").lastName
→ [E-ProjNew]
"Pierce"
```

## Exercise 2

Write  $e$  for the expression

```
new BestsellerBook(new Author("Benjamin", "Pierce"), 1024)
```

We then have the following derivation:

$$\begin{array}{c} \text{STRING} \frac{}{A \vdash \text{"Benjamin"} : \text{String}} \\ \text{STRING} \frac{}{A \vdash \text{"Pierce"} : \text{String}} \\ \text{String} <: \text{String} \\ \text{F-NEW} \frac{\text{fields}(\text{Author}) = \text{String } \text{firstName}, \text{String } \text{lastName}}{A \vdash \text{new Author}(\text{"Benjamin"}, \text{"Pierce"}) : \text{Author}} \\ \text{INT} \frac{}{A \vdash 1024 : \text{int}} \\ \text{Author} <: \text{Author} \quad \text{int} <: \text{int} \\ \text{F-NEW} \frac{\text{fields}(\text{BestsellerBook}) = \text{Author } \text{author}, \text{int } \text{howManySelled}}{A \vdash e : \text{BestsellerBook}} \\ \text{F-INKV} \frac{\text{mtype}(\text{getAuthorLastName}, \text{BestsellerBook}) = () \rightarrow \text{String}}{A \vdash e.\text{getAuthorLastName}() : \text{String}} \end{array}$$