

## Advanced Functional Programming

Software Engineering Chair and Programming Systems Lab

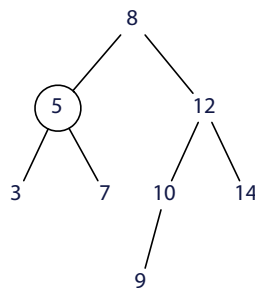
### Small-group work

Questions for *The Zipper* by Gérard Huet, *Journal of Functional Programming*, 7(5), pages 549–554, September 1997.

1. Compare the zipper with a pointer-based implementation in an imperative language. Consider in particular time and memory complexity.
2. Implement a zipper for the following type. You just have to implement the data structure but you don't need to provide navigation operations.

```
type 'a t = Empty of 'a
         | Unary of 'a * 'a t
         | Binary of 'a * 'a t * 'a t
```

3. Presume you have a sum type for which you want to implement a zipper. How many summands do you need for the sum type of the zipper's `path` type?
4. In the following binary search tree the focus is on element 5. Sketch the corresponding zipper for this situation and after the focus moved to element 7.



5. List some disadvantages or inconveniences of Huet's zipper.

### Evaluation

How are we doing? We really want to know and have prepared some questions for you at the URL below. Please also provide any additional comments you have about his course.

<http://www.st.cs.uni-sb.de/~gross/cgi-bin/eva2/fillout.cgi>

Your answers are completely anonymous. However, you can fill out the form only once. For this we will provide you with a token that you need to access the questions.

## Homework Assignment

1. Read *Composable Memory Transactions* by Tim Harris and others. It appeared in the Proceedings of the ACM SIGPLAN 2005 Symposium on Principles and Practice of Parallel Programming, pages 48–60.
2. This is a paper about a hot topic and technically quite involved. You don't have to understand or cover section 5 in detail; we will try to discuss this in the seminar.
3. Summarize the paper *in your own words* on one page. Put your name and student ID on your summary and drop off a printout at office 326/45 until Monday, January 9th at noon (12 am). If the door is closed, slide your printout under the door. No Emails.
4. Which of the topics covered in the seminar do you find the most interesting? Which one would make a good topic to present? We will ask you towards the end of the seminar to pick a topic and to give a 20-minutes talk, accompanied with a short write up. Start to think about this.

