

Computational Linguistics I, Winter 2006. Marcus Kracht

To be submitted: Friday, February 10, 2006.

- [A 3.1] Let \mathbf{B} be the following combinator. $\mathbf{B}xy = yx$. First, establish the type of this combinator abstractly. Then type this into OCaml and write down what it reports on the type of \mathbf{B} . Describe the function \mathbf{BKS} and verify the result by asking OCaml. Further, what type does \mathbf{BIK} have? Give the most general solution and verify it with OCaml.
- [A 3.2] Show that $\mathbf{S(K(SI))K}$ is identical to \mathbf{B} . Do this in two steps: first, calculate its type and show that it can be unified with the type of \mathbf{B} . Second, apply it to x and y and show that you get yx .
- [A 3.3] Write a program that translates an integer into English. For example, on input 6789010191 it will return

```
        six thousand seven hundred eighty nine
    million ten thousand one hundred ninety one
```

For higher numbers let it use `million million` for 10^{12} , `million million million` for 10^{18} and so on.

- [A 3.4] Write a program that forms the plural of English nouns taking notice of various cases that arise (`car:cars`, `bus:busses`, `bush:bushes`, `sheep:sheep`).