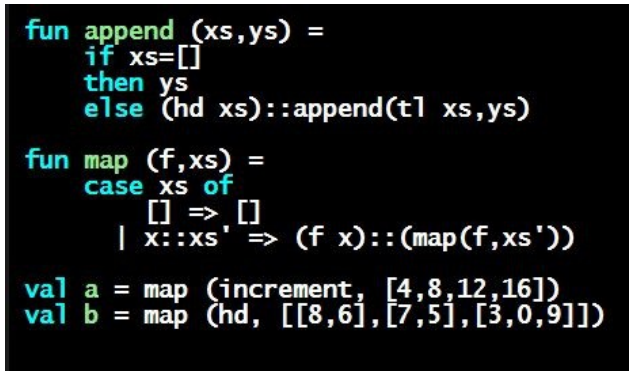


# Programming Languages

## Dan Grossman
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*Optional: Are All PLs the Same?*

# *All cars are the same*

- To make it easier to rent cars, it is great that they all have steering wheels, brakes, windows, headlights, etc.
  - Yet it is still uncomfortable to learn a new one
  - Can you be a great driver if you only ever drive one car?
- And maybe PLs are more like cars, trucks, boats, and bikes
- So are all PLs really the same…

# *Are all languages the same?*

Yes:

- Any input-output behavior implementable in language X is implementable in language Y [Church-Turing thesis]
- Java, ML, and a language with one loop and three infinitely-large integers are “the same”

Yes:

- Same fundamentals reappear: variables, abstraction, one-of types, recursive definitions, …

No:

- The human condition vs. different cultures (travel to learn more about home)
- The primitive/default in one language is awkward in another
- Beware “the Turing tarpit”