

Programming Languages: Lecture 5

Functors and Compiling

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1 Functors

Definition 1 (Functor). A *functor* is a structure that takes other structures as parameters and yields a new structure,

1. A functor can be applied to argument structures to yield a new structure.
2. A functor can be applied only to structures that match certain signature constraints.
3. Functors may be used to test existing structures or to create new structures.
4. Functors may be used to express generic algorithms.

2 Compiling

In general, a compiler/interpreter for a source language \mathcal{S} written in some language \mathcal{C} translates code written in \mathcal{S} to a target \mathcal{T} .

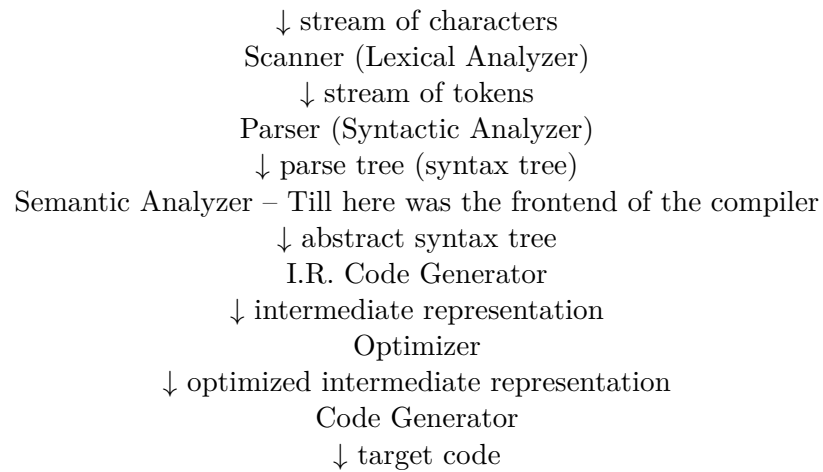
2.1 The Compiling Process

Besides $\mathcal{S}, \mathcal{C}, \mathcal{T}$, there could be several other intermediate languages, $\mathcal{I}_1, \mathcal{I}_2, \dots$ called *intermediate representations*, into which the source program could be translated in the process of compiling or interpreting the source programs written in \mathcal{S} .

Some of these intermediate representations could just be datatypes of OOPs languages.

2.2 Phases of a Compiler

The phases may be different from the various passes in compilation.



Symbol table manager on right, and Error-handler on left.