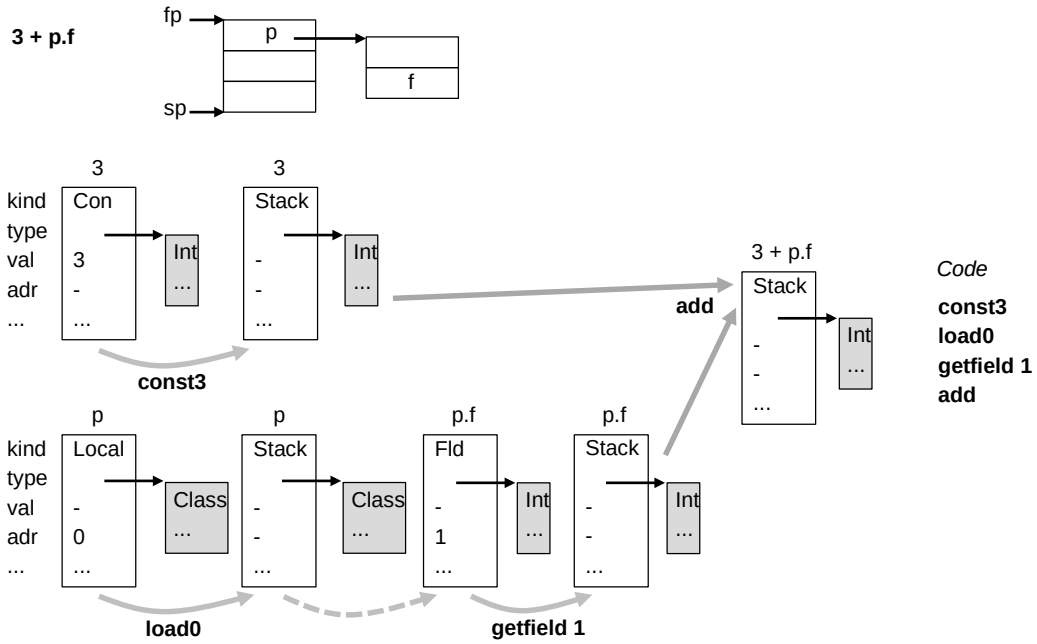
Example 1: Operands of Code Generation (1)

Similar to Fig. 6.25, show which operands are created when compiling the expression `3 + p.f` and which code is generated in the process. `p` is a local variable at address 0 that points to an object in which the field `f` has the offset 1.

Solution



- First, a `Con` operand is created for the constant 3. The instruction **const3** loads this constant onto the EStack, so it is now described by a `Stack` operand.
- The local variable `p` is described by a `Local` operand with address 0. The instruction **load0** loads this variable onto the EStack, so it is now described by a `Stack` operand.
- The field `f` is then looked up in the field list of the type of `p`. A `Fld` operand with offset 1 is created, which is loaded onto the EStack with **getfield 1** and is thus described by a `Stack` operand.
- Finally, the two values on the EStack (`3` and `p.f`) are added by the **add** instruction and the result (`3 + p.f`) is now on the EStack, so it is described by a `Stack` operand.