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The F Programming Language

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Abstract

We introduce a new programming language, F, that is intended for the teaching of modern concepts. Strong typing

F is a strongly typed language, requiring all typed entities – variables and functions – to be explicitly typed. Any entity detected by the compiler that has not been assigned a type, such as a misspelt variable name, will cause it to flag an error. Furthermore, any other attributes that an entity might have, for instance that it is dynamically allocatable at run time, must be specified on the

```
subroutine  example (A, N)
   integer, intent(in)  ::  N
   real, intent(inout), dimension (:,:)  ::  A
   real, dimension (size(A,2), size(A,1), N)  ::  copies_of_A_transpose
```
creates a local array that can hold N copies of the transpose of the argument array A.

– Allocatable arrays can be allocated and deallocated at run-time and allow storage to be sized to
run-time requirements. Unlike automatic arrays they can persist between procedure calls.
F's rich array processing facility goes

students in other languages – correct the first error, ignore the rest, and obtain another error scan.
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new programmers (and new programs) nothing was removed from the language. The F subset removes all