

Agenda and Schedule of Fortran Course June 2023

Uwe Küster, Ralf Schneider



schedule 1st day

- 9:00 Fortran basics part 1
 - 12:30 Lunch break
 - 13:30 Fortran basics part 2
 - 17:00+ End
- content, terms and concepts:
- history, links, character set, declarations and attributes, intrinsic types, derived types (parameters), floating point accuracy, kind, operators, control constructs: do, do concurrent, if-then, select-case, where, forall, associate, block, goto, stop
 - we will make breaks at about all 30 minutes for recreation and doing the excercises
 - please give me a sign if you need a break



schedule 2nd day

- 9:00 program units, modules, procedures part 1
 - 12:30 Lunch break
 - 13:30 program units, modules, procedures part 2
 - 17:00+ End
- content, terms and concepts:
- programs, subroutines, functions, (pure, simple, elemental, module, external, internal, intrinsic, type bound, generic) procedures, (sub) modules, selfdefined and overloaded operators, keywords and optional arguments, information hiding (public, private, protected), type bound procedures, (implicit, explicit) interfaces, interface blocks, iso_fortran_env module
 - we will make breaks at about all 30 minutes for recreation and doing the excercises
 - please give me a sign if you need a break



schedule 3rd day

- 9:00 Dynamic data 1
 - 12:30 Lunch break
 - 13:30 Dynamic data 2
 - 17:00+ End
- content, terms and concepts:
- pointer, target, allocatable arrays, automatic arrays, arrays in interfaces, contiguous attribute, allocatable strings, array syntax, influence of constructs on performance
 - we will make breaks at about all 30 minutes for recreation and doing the exercises
 - please give me a sign if you need a break



schedule 4th day

- 9:00 Input and Output
 - content, terms and concepts:
 - read, write, print, keywords, format, edit descriptors, open, close, flush, namelist, formatted IO, unformatted IO, direct access IO, asynchronous IO, international character sets, stream IO, inquire, IO performance
- 12:30 Lunch break
- 13:30 Intrinsic procedures
 - overview about all Fortran standard procedures; no exercises
- 14:00 Obsolete features
 - understand old and obsolete Fortran features to be avoided
- 15:00 multiple source files
 - how to handle larger programs
- 16:00 compiler usage
- 17:00+ End



schedule 5th day

- 9:00 Object orientation in Fortran
 - content, terms and concepts:
 - procedure statement, procedure pointers, abstract interfaces, import, type bound procedures, type extension and inheritance, abstract types, polymorphic entities, select type construct, structure constructor, finalizer
- 12:30 Lunch break
- 13:30 Rules for serial code performance optimization
 - content, terms and concepts
 - how hardware looks, principles of code performance, memory access, how to get better loop performance
- 16:00+ End



end of agenda and schedule Fortran course

