

## Program structure

Traditional Fortran solution:

```
program p      ! main program
real x
call sub
..
end

subroutine sub ! subprogram
..
end
```

The main program and subprograms are compiled separately and linked together. Subroutines are external. No difference if they are in a single file or in many separate files.

Each program module can access only its own local variables.

A possible global environment must be given on a common area:

```
program p      ! main program
real x
common /c1/ x
call sub
..
end
subroutine sub ! subprogram
common /c1/ x
..
end
```

Potential problem:

```
program p      ! main program
real x(3),y(2),s(2)
common /c1/ x,y,s
call sub
..
end
subroutine sub ! subprogram
real x(2),y(2),s(2)
common /c1/ x,s,y
..
end
```

In F77 a possible solution is to put global definitions in a separate file and use `include` directive to import the file into each program file using it.

A possible solution in Fortran 90:

```
program p      ! main program
real x(3),y(2),s(2)
call sub
..
end

contains

subroutine sub ! internal subroutine
! can access variables of the main program
y=s ; x=1.0
..
end
end program
```

Another and a better method is to use modules.