FORTRAN - BASIC SYNTAX

A Fortran program is made of a collection of program units like a main program, modules, and external subprograms or procedures.

Each program contains one main program and may or may not contain other program units. The syntax of the main program is as follows:

```
program program_name
implicit none

! type declaration statements
! executable statements

end program program_name
```

A Simple Program in Fortran

Let's write a program that adds two numbers and prints the result:

```
program addNumbers

! This simple program adds two numbers
   implicit none

! Type declarations
   real :: a, b, result

! Executable statements
   a = 12.0
   b = 15.0
   result = a + b
   print *, 'The total is ', result

end program addNumbers
```

When you compile and execute the above program, it produces the following result:

```
The total is 27.0000000
```

Please note that:

- All Fortran programs start with the keyword **program** and end with the keyword **end program,** followed by the name of the program.
- The **implicit none** statement allows the compiler to check that all your variable types are declared properly. You must always use **implicit none** at the start of every program.
- Comments in Fortran are started with the exclamation mark !, as all characters after this *exceptinacharacterstring* are ignored by the compiler.
- The **print** * command displays data on the screen.
- Indentation of code lines is a good practice for keeping a program readable.
- Fortran allows both uppercase and lowercase letters. Fortran is case-insensitive, except for string literals.

Basics

The **basic character set** of Fortran contains:

- the letters A ... Z and a ... z
- the digits 0 ... 9
- the underscore _ character
- the special characters = : + blank - * / [ ] , . $ ' ! " % & ; < > ?

Tokens are made of characters in the basic character set. A token could be a keyword, an identifier, a constant, a string literal, or a symbol.

Program statements are made of tokens.

Identifier

An identifier is a name used to identify a variable, procedure, or any other user-defined item. A name in Fortran must follow the following rules:

- It cannot be longer than 31 characters.
- It must be composed of alphanumeric characters *allthelettersofthealphabet*, *andthedigits*0*to*9 and underscores _.
- First character of a name must be a letter.
- Names are case-insensitive

Keywords

Keywords are special words, reserved for the language. These reserved words cannot be used as identifiers or names.

The following table, lists the Fortran keywords:

The non-I/O keywords				
allocatable	allocate	assign	assignment	block data
call	case	character	common	complex
contains	continue	cycle	data	deallocate
default	do	double precision	else	else if
elsewhere	end block data	end do	end function	end if
end interface	end module	end program	end select	end subroutine
end type	end where	entry	equivalence	exit
external	function	go to	if	implicit
in	inout	integer	intent	interface
intrinsic	kind	len	logical	module
namelist	nullify	only	operator	optional
out	parameter	pause	pointer	private
program	public	real	recursive	result
return	save	select case	stop	subroutine
target	then	type	type	use
Where	While			

The I/O related keywords				
backspace	close	endfile	format	inquire
open	print	read	rewind	Write