1 Instalation of Linux

The detailed description: [link](#)
   `https://msekce.karlin.mff.cuni.cz/~dolejsi/Vyuka/NS_source/Linux/index-install.html`

2 Basic commands of Linux

Commands from the `command lines`

- `name/codes/integrals/data/` – structures of directories `/`

- `pwd` – return actual directory

- `mkdir` – create a (sub-)directory

- `rmdir` – remover a (sub-)directory

- `cd` – changes the directory

- `ls` – list the files, option `ls -l`

- `rm` – remove a file (or directory), option `rm -r` - DANGEROUS !

- `cp file1 file2` – copy a file

- `mv file1 file2` – rename a file

- `mv file1 dir2` – move a file to directory

- `~/` – home directory

- `touch` – create a file

- `less` – list the file

- **`more`** – list the file

- **`man`** – list the help (manual) for the given word

3   Installation of libraries in Linux

For the purposes of this lecture, we will need

- a Fortran 90 translater, the good choice is `gfortran`

- suitable text editor (e.g., `gedit`, `emacs`)

- software for visualization `gnuplot`

  First, update of the instalation of the system:

  `sudo apt-get update`

Your Linux password is required.
  Installation of packages, e.g., of `gedit`, try

  `sudo apt-get install gedit`

similarly for gnuplot

  `sudo apt-get install gnuplot`

4   gfortran on Linux

Try

  `sudo apt-get install gfortran`

  or directly from `https://gcc.gnu.org/wiki/GFortranBinaries#GNU.2BAC8-Linux`

Simple code `test.f90`

```fortran
program test
  print*,'Hello world!'
  write(*,*) 'Hello world!'
!  write(22,*) 'Hello world!'
end
```

translation of the program `test.f90` from the command line:

- `gfortran test.f90 -o test` – single precision

- `gfortran -fPIC -fdefault-real-8 test.f90 -o test` – double precision

- `./test` – running of the code from the command line

```fortran
program summ
  real :: sum
  integer :: i, n

  sum = 0.
  n = 100

  do i=1, n
     sum = sum + i
  enddo
  print*,'End after ',n,'-steps,  sum = ', sum

end program summ
```

Use of **gnuplot**

```
terminal>  gnuplot


gnuplot> plot sin(x) w l
gnuplot> plot sin(x) w l, cos(x) w l
```