HPC.NRW

INTRODUCTION TO LINUX

(in an HPC context)

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ENVIRONMENT VARIABLES

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INTRODUCTION TO LINUX

– "Environment": which variables are defined and available
  – To a process
  – Within a shell

– Avoids hardcoding varying information

– Example: current user's home directory
  `HOME=/home/Schulung12`

– Helpful to provide configuration scripts
  – Change information in a single location
  – Keep business logic apart from config

– Many environment variables already defined
  – By system (e.g. `$USER`)
  – By installed software

– Command `env` to show all currently defined variables
  – Convention: usually capital letters

– Passing on environment variables:

```
export MY_VAR="value"
```

  – Available in child processes

– Cluster: different environments for different people
  – Admins cannot predict who needs what
  – Different version of same software: collision of environment variables!

– Solution: make it easy to switch environments
  – Environment <u>modules</u>: sets of environment settings
  – Not limited to clusters

– Example: OpenMPI module (compiled with GCC)
```
$ module load openmpi/gcc/64/1.10.3
```

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– Each module has a definition file
  – Actually a LUA or Tcl script

– Contains at least three things
  – Description what module does

  – Prepend to path and other variables

  – Add new variables

– Usually prepends rather than appending

– Environment variable `PATH`
  – List of directories (separated by `:`)
  – Console will look for command names
    – Command may be in multiple directories: first hit is used
  – Own commands: add directory to path

– Core concept of operating system
  – Same principle in Windows console

– Also used by other software
  – Example `PYTHONPATH`