Homework 7

Send the scripts as three separate files: yourname_HW7_1.sh (_2 and _3)

1. Write a script that takes two arguments - an integer N and a yes/no flag(for yes, it should accept 1 or "yes", and 0 or "no" for no, ignoring the case [YES/Yes/yes is the same]) and using the 'factor' command checks for all numbers from 1 to N if they are a prime number, and if the flag is yes, then additionally writes out the factorization of these numbers. The script has to check the number of arguments and in case no argument is supplied, it exits with some error message (in case of one argument (N), sets a default value for the flag).t also has to write out some error if the argument has wrong format. The output should have two or three columns: number prime(yes/no) factorization(if the flag is 1)
2. Write a script that takes three arguments, datetime1, datetime2 (in YYYYMMDD_HH:MM:SS format) and an interval like 3d, 1h, 40m, 100s where d is for days, h is for hours, m is for minutes and s is for seconds. The script returns the list (as standard output or written into a file) of all datetimes with the step of the specified interval between the specified datetimes in the same format. The script has to check the validity of the datetimes on the input. Hint: use the "while" or "until" cycles and "date" command.
3. This task requires to work with netcdf files. These are data files contain any multidimensional data (mutiple dimensions axes, multiple variables defined along any (sub)set of the axes). This dataformat is extensively used in climatology and meteorology, but also in other earth sciences. A few of such files are in `http://meop3.troja.mff.cuni.cz:8010/linux/netcdf/` To view the header portion of the file, use the "ncdump -h netcdffile.nc" command. This does not show the actual values of the variables, just 1) the list of dimensions and the list of the 2) variables. For each variable, additional attributes can be defined, typically "units". Write a script, that gets one argument, the name (path) of the netcdf file. It first checks if the file exists then it checks if the file is really a netcdf file (with the ncdump command: 'Unknown file format' is reported if this is not the case), and finally it writes out a "nice" (it's up to you) list of the variables including their units (the "Variable" part of the header starts after "variables:" and ends at "global attributes:"). If there is no unit defined for a variable, it outputs some appropriate message (like "unknown units" etc.).