

# Lab 3 Tasks

## Day 4

4. List the environment variables in your current shell.

=> env

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ env  
SHELL=/bin/bash  
LC_ADDRESS=ar_EG.UTF-8  
LC_NAME=ar_EG.UTF-8  
LC_MONETARY=ar_EG.UTF-8  
PWD=/home/mabotalb  
LOGNAME=mabotalb  
HOME=/home/mabotalb  
LC_PAPER=ar_EG.UTF-8  
LANG=en_US.UTF-8  
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33:cd=40;33:01:or=40;31:01:mi=00:su=37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*.tar=01;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;31:*.lha=01;31:*.lz4=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.txz=01;31:*.tzo=01;31:*.t7z=01;31:*.zip=01;31:*.z=01;31:*.dz=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=01;31:*.zst=01;31:*.tzst=01;31:*.bz2=01;31:*.bz=01;31:*.tbz=01;31:*.tbz2=01;31:*.tz=01;31:*.deb=01;31:*.rpm=01;31:*.jar=01;31:*.war=01;31:*.ear=01;31:*.sar=01;31:*.rar=01;31:*.alz=01;31:*.ace=01;31:*.zoo=01;31:*.cpio=01;31:*.7z=01;31:*.rz=01;31:*.cab=01;31:*.wim=01;31:*.swm=01;31:*.dwm=01;31:*.esd=01;31:*.jpg=01;35:*.jpeg=01;35:*.mjpg=01;35:*.mjpeg=01;35:*.gif=01;35:*.bmp=01;35:*.pbm=01;35:*.pgm=01;35:*.ppm=01;35:*.tga=01;35:*.xbm=01;35:*.xpm=01;35:*.tif=01;35:*.tiff=01;35:*.png=01;35:*.svg=01;35:*.svgz=01;35:*.mng=01;35:*.pcx=01;35:*.mov=01;35:*.mpg=01;35:*.mpeg=01;35:*.m2v=01;35:*.mkv=01;35:*.webm=01;35:*.webp=01;35:*.ogm=01;35:*.mp4=01;35:*.m4v=01;35:*.mp4v=01;35:*.vob=01;35:*.qt=01;35:*.nuv=01;35:*.wmv=01;35:*.asf=01;35:*.rm=01;35:*.rmvb=01;35:*.flc=01;35:*.avi=01;35:*.fli=01;35:*.flv=01;35:*.gl=01;35:*.dl=01;35:*.xcf=01;35:*.xwd=01;35:*.yuv=01;35:*.cgm=01;35:*.emf=01;35:*.ogv=01;35:*.ogx=01;35:*.aac=00;36:*.au=00;36:*.flac=00;36:*.m4a=00;36:*.mid=00;36:*.midi=00;36:*.mka=00;36:*.mp3=00;36:*.mpc=00;36:*.ogg=00;36:*.ra=00;36:*.wav=00;36:*.oga=00;36:*.opus=00;36:*.spx=00;36:*.xspf=00;36:  
LESSCLOSE=/usr/bin/lesspipe %s %s  
LC_IDENTIFICATION=ar_EG.UTF-8  
TERM=xterm-256color  
LESSOPEN=| /usr/bin/lesspipe %s  
USER=mabotalb  
SHLVL=1  
LC_TELEPHONE=ar_EG.UTF-8  
LC_MEASUREMENT=ar_EG.UTF-8  
LC_TIME=ar_EG.UTF-8  
XDG_DATA_DIRS=/usr/share/gnome:/usr/local/share:/usr/share:/var/lib/napd/desktop  
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin  
MAIL=/var/mail/mabotalb  
LC_NUMERIC=ar_EG.UTF-8  
_=/usr/bin/env  
mabotalb@ubuntu22:~$
```

=> printenv

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ printenv  
SHELL=/bin/bash  
LC_ADDRESS=ar_EG.UTF-8  
LC_NAME=ar_EG.UTF-8  
LC_MONETARY=ar_EG.UTF-8  
PWD=/home/mabotalb  
LOGNAME=mabotalb  
HOME=/home/mabotalb  
LC_PAPER=ar_EG.UTF-8  
LANG=en_US.UTF-8  
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=00:su=37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*.tar=01;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;31:*.lha=01;31:*.lz4=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.txz=01;31:*.tzo=01;31:*.t7z=01;31:*.zip=01;31:*.z=01;31:*.dz=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=01;31:*.zst=01;31:*.tzst=01;31:*.bz2=01;31:*.bz=01;31:*.tbz=01;31:*.tbz2=01;31:*.tz=01;31:*.deb=01;31:*.rpm=01;31:*.jar=01;31:*.war=01;31:*.ear=01;31:*.sar=01;31:*.rar=01;31:*.alz=01;31:*.ace=01;31:*.zoo=01;31:*.cpio=01;31:*.7z=01;31:*.rz=01;31:*.cab=01;31:*.wim=01;31:*.swm=01;31:*.dwm=01;31:*.esd=01;31:*.jpg=01;35:*.jpeg=01;35:*.mjpg=01;35:*.mjpeg=01;35:*.gif=01;35:*.bmp=01;35:*.pbm=01;35:*.pgm=01;35:*.ppm=01;35:*.tga=01;35:*.xbm=01;35:*.xpm=01;35:*.tif=01;35:*.tiff=01;35:*.png=01;35:*.svg=01;35:*.svgz=01;35:*.mng=01;35:*.pcx=01;35:*.mov=01;35:*.mpg=01;35:*.mpeg=01;35:*.m2v=01;35:*.mkv=01;35:*.webm=01;35:*.webp=01;35:*.ogm=01;35:*.mp4=01;35:*.m4v=01;35:*.mp4v=01;35:*.vob=01;35:*.qt=01;35:*.nuv=01;35:*.wmv=01;35:*.asf=01;35:*.rm=01;35:*.rmvb=01;35:*.flc=01;35:*.avi=01;35:*.fli=01;35:*.flv=01;35:*.gl=01;35:*.dl=01;35:*.xcf=01;35:*.xwd=01;35:*.yuv=01;35:*.cgm=01;35:*.emf=01;35:*.ogv=01;35:*.ogx=01;35:*.aac=00;36:*.au=00;36:*.flac=00;36:*.m4a=00;36:*.mid=00;36:*.midi=00;36:*.mka=00;36:*.mp3=00;36:*.mpc=00;36:*.ogg=00;36:*.ra=00;36:*.wav=00;36:*.oga=00;36:*.opus=00;36:*.spx=00;36:*.xspf=00;36:  
LESSCLOSE=/usr/bin/lesspipe %s %s  
LC_IDENTIFICATION=ar_EG.UTF-8  
TERM=xterm-256color  
LESSOPEN=| /usr/bin/lesspipe %s  
USER=mabotalb  
SHLVL=1  
LC_TELEPHONE=ar_EG.UTF-8  
LC_MEASUREMENT=ar_EG.UTF-8  
LC_TIME=ar_EG.UTF-8  
XDG_DATA_DIRS=/usr/share/gnome:/usr/local/share:/usr/share:/var/lib/snapd/desktop  
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin  
MAIL=/var/mail/mabotalb  
LC_NUMERIC=ar_EG.UTF-8  
_=/usr/bin/printenv  
mabotalb@ubuntu22:~$
```

5. List all of the environment variables for the bash shell.  
=> man bash

```
mabotalb@ubuntu22: ~  
Shell Variables  
The following variables are set by the shell:  
  
- At shell startup, set to the pathname used to invoke the shell or shell script being executed as passed in the environment or argument list. Subsequently, expands to the last argument to the previous simple command executed in the foreground, after expansion. Also set to the full pathname used to invoke each command executed and placed in the environment exported to that command. When checking mail, this parameter holds the name of the mail file currently being checked.  
  
BASH  
Expands to the full filename used to invoke this instance of bash.  
  
BASHOPTS  
A colon-separated list of enabled shell options. Each word in the list is a valid argument for the -s option to the shopt builtin command (see SHELL BUILTIN COMMANDS below). The options appearing in BASHOPTS are those reported as on by shopt. If this variable is in the environment when bash starts up, each shell option in the list will be enabled before reading any startup files. This variable is read-only.  
  
BASHPID  
Expands to the process ID of the current bash process. This differs from $$ under certain circumstances, such as subshells that do not require ID to be re-initialized. Assignments to BASHPID have no effect. If BASHPID is unset, it loses its special properties, even if it is subsequently reset.  
  
BASH_ALIASES  
An associative array variable whose members correspond to the internal list of aliases as maintained by the alias builtin. Elements added to this array appear in the alias list; however, unsetting array elements currently does not cause aliases to be removed from the alias list. If BASH_ALIASES is unset, it loses its special properties, even if it is subsequently reset.  
  
BASH_ARGC  
An array variable whose values are the number of parameters in each frame of the current bash execution call stack. The number of parameters to the current subroutine (shell function or script executed with . or source) is at the top of the stack. When a subroutine is executed, the number of parameters passed is pushed onto BASH_ARGC. The shell sets BASH_ARGC only when in extended debugging mode (see the description of the extdebug option to the shopt builtin below). Setting extdebug after the shell has started to execute a script, or referencing this variable when extdebug is not set, may result in inconsistent values.  
  
BASH_ARGV  
An array variable containing all of the parameters in the current bash execution call stack. The final parameter of the last subroutine call is at the top of the stack; the first parameter of the initial call is at the bottom. When a subroutine is executed, the parameters supplied are pushed onto BASH_ARGV. The shell sets BASH_ARGV only when in extended debugging mode (see the description of the extdebug option to the shopt builtin below). Setting extdebug after the shell has started to execute a script, or referencing this variable when extdebug is not set, may result in inconsistent values.  
  
BASH_ARGV0  
Manual page bash(1) line 527 (press h for help or q to quit)
```

=> set

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ set  
BASH=/bin/bash  
BASHOPTS=checkwinsize:cmdhist:complete_fullquote:expand_aliases:extglob:extquote:force_ignore_globasciiranges:histappend:interactive_comments  
:login_shell:progcomp:promptvars:sourcepath  
BASH_ALIASES=()  
BASH_ARGC=( [0]="0" )  
BASH_ARGV=()  
BASH_CMDS=()  
BASH_COMPLETION_VERSION0=([0]="2" [1]="11")  
BASH_LINENO=()  
BASH_SOURCE=()  
BASH_VERSION0=([0]="5" [1]="1" [2]="16" [3]="1" [4]="release" [5]="x86_64-pc-linux-gnu")  
BASH_VERSION='5.1.16(1)-release'  
COLUMNS=142  
DEFAULT_XDG_CONFIG_DIRS=/etc/xdg  
DEFAULT_XDG_DATA_DIRS=/usr/local/share/:/usr/share/  
DIRSTACK=()  
EUID=1000  
GROUPS=()  
HISTCONTROL=ignoreboth  
HISTFILE=/home/mabotalb/.bash_history  
HISTFILESIZE=2000  
HISTSIZE=1000  
HOME=/home/mabotalb  
HOSTNAME=ubuntu22  
HOSTTYPE=x86_64  
IFS=$' \t\n'  
LANG=en_US.UTF-8  
LC_ADDRESS=ar_EG.UTF-8  
LC_IDENTIFICATION=ar_EG.UTF-8  
LC_MEASUREMENT=ar_EG.UTF-8  
LC_MONETARY=ar_EG.UTF-8  
LC_NAME=ar_EG.UTF-8  
LC_NUMERIC=ar_EG.UTF-8  
LC_PAPER=ar_EG.UTF-8  
LC_TELEPHONE=ar_EG.UTF-8  
LC_TIME=ar_EG.UTF-8  
LESSCLOSE=/usr/bin/lesspipe %s %s  
LESSOPEN='| /usr/bin/lesspipe %s'
```

6. What are the commands that list the value of a specific variable?

=> echo \$VARIABLE\_NAME (echo \$PATH) or printenv VARIABLE\_NAME (printenv PATH)

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ echo $PATH  
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin  
mabotalb@ubuntu22:~$  
mabotalb@ubuntu22:~$  
mabotalb@ubuntu22:~$ printenv PATH  
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin  
mabotalb@ubuntu22:~$
```

7. Display your current shell name. => echo \$SHELL

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ echo $SHELL  
/bin/bash  
mabotalb@ubuntu22:~$
```

8. State the initialization files of: sh, ksh, bash.

command line files:

sh => /etc/profile

ksh => /etc/profile or ~/.profile

bash => /etc/profile or ~/.bash\_profile or ~/.profile

startup files:

sh => none

ksh => ~/.kshrc

bash => ~/.bashrc

9. Edit in your profile to display date at login and change your prompt permanently.

=> for all users we can edit /etc/profile file

=> for a specific user we can edit ~/.profile or  
~/bash\_profile in the user home directory

=> vi ~/.profile (for user ahmed)

echo "Hello, Ahmed :)"

date

PS1="\$USER>>>" (change the prompt permanently)

```
ahmed@ubuntu22:~$ vi .profile
ahmed@ubuntu22:~$ cat .profile
# ~/.profile: executed by the command interpreter for login shells.
# This file is not read by bash(1), if ~/.bash_profile or ~/.bash_login
# exists.
# see /usr/share/doc/bash/examples/startup-files for examples.
# the files are located in the bash-doc package.

# the default umask is set in /etc/profile; for setting the umask
# for ssh logins, install and configure the libpam-umask package.
#umask 022

# if running bash
if [ -n "$BASH_VERSION" ]; then
    # include .bashrc if it exists
    if [ -f "$HOME/.bashrc" ]; then
        . "$HOME/.bashrc"
    fi
fi

# set PATH so it includes user's private bin if it exists
if [ -d "$HOME/bin" ] ; then
    PATH="$HOME/bin:$PATH"
fi

# set PATH so it includes user's private bin if it exists
if [ -d "$HOME/.local/bin" ] ; then
    PATH="$HOME/.local/bin:$PATH"
fi

echo "Hello, Ahmed :)"
date
PS1="$USER>>>"
ahmed@ubuntu22:~$
```

After changes:

```
mabotalb@ubuntu22:~$ su - mabotalb
Password:
mabotalb@ubuntu22:~$ su - ahmed
Password:
Hello, Ahmed :)
08 2024 م، EET 10:43:57
ahmed>>>
```

10. What is the purpose of \ ?

=> It's a backslash used to escape the space character that follows it and prevents the shell from treating the space as a delimiter or separator so "echo \" will be interpreted as "echo" and it will wait for input as the command isn't completed yet

Notice the prompt ">" what is that?

=> It refers to the shell expects additional input to complete a command

and how can you change it from “>” to “:” ?

=> we can change > to : by adding PS2=':' to ~/.profile file and to apply the changes immediately run source ~/.profile

```
mabotalb@ubuntu22: ~  
# This file is not read by bash(1), if ~/.bash_profile or ~/.bash_login  
# exists.  
# see /usr/share/doc/bash/examples/startup-files for examples.  
# the files are located in the bash-doc package.  
  
# the default umask is set in /etc/profile; for setting the umask  
# for ssh logins, install and configure the libpam-umask package.  
#umask 022  
  
# if running bash  
if [ -n "$BASH_VERSION" ]; then  
    # include .bashrc if it exists  
    if [ -f "$HOME/.bashrc" ]; then  
        . "$HOME/.bashrc"  
    fi  
fi  
  
# set PATH so it includes user's private bin if it exists  
if [ -d "$HOME/bin" ] ; then  
    PATH="$HOME/bin:$PATH"  
fi  
  
# set PATH so it includes user's private bin if it exists  
if [ -d "$HOME/.local/bin" ] ; then  
    PATH="$HOME/.local/bin:$PATH"  
fi  
  
echo "Hello, Ahmed :)"  
date  
PS1="$USER>>>"  
PS2=':'  
ahmed>>>echo \  
> ^C  
ahmed>>>source .profile  
Hello, Ahmed :)  
08 2024, ٠٨ EET 10:50:31 م  
ahmed>>>echo \  
:  
:
```

11. Create a Bash shell alias named ls for the “ls -l” command

=> alias LS="ls -l"

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ alias LS="ls -l"  
mabotalb@ubuntu22:~$  
mabotalb@ubuntu22:~$  
mabotalb@ubuntu22:~$ LS  
total 73832  
drwxr-xr-x  2 mabotalb mabotalb  4096 21:24 25 نوفي Desktop  
drwxrwxr-x  2 mabotalb mabotalb  4096 15:00  2 يينا docs  
drwxr-xr-x  2 mabotalb mabotalb  4096 22:25  6 يينا Documents  
drwxr-xr-x 13 mabotalb mabotalb  4096 18:40  8 يينا Downloads  
drwxrwxr-x  2 mabotalb mabotalb  4096 15:12  1 ديس javasharedresources  
-rw-rw-r--  1 mabotalb mabotalb 91987 14:05  2 يينا lorem.txt  
-rw-rw-r--  1 mabotalb mabotalb 75437406 09:45 18 ديس mqttx-cli-linux-x64  
drwxr-xr-x  2 mabotalb mabotalb  4096 21:24 25 نوفي Music  
-rw-rw-r--  1 mabotalb mabotalb   59 18:27  4 يينا mycv  
-rw-rw-r--  1 mabotalb mabotalb    0 14:27  4 يينا myfile  
dr--rwxr-x  2 mabotalb mabotalb  4096 14:04  4 يينا myteam  
d-----  2 mabotalb mabotalb  4096 14:40  4 يينا newdir  
-----  1 mabotalb mabotalb    0 14:39  4 يينا newfile  
-rw-wx--x  1 mabotalb mabotalb    0 14:12  4 يينا oldpasswd  
-rw-rw-r--  1 mabotalb mabotalb   87 06:30  8 ديس package-lock.json  
drwxr-xr-x  3 mabotalb mabotalb  4096 15:10 28 نوفي Pictures  
drwxrwxr-x  4 mabotalb mabotalb  4096 19:15  7 يينا Projects  
drwxr-xr-x  2 mabotalb mabotalb  4096 21:24 25 نوفي Public  
drwx----- 17 mabotalb mabotalb  4096 15:04 12 ديس snap  
drwxr-xr-x  2 mabotalb mabotalb  4096 21:24 25 نوفي Templates  
drwxr-xr-x  4 mabotalb mabotalb  4096 17:45  3 يينا Videos  
mabotalb@ubuntu22:~$
```