1. Set up Linux Virtual Machine in VirtualBox.

2. Familiarize yourself with the commands and utilities listed in the presentation (switching between **virtual terminals** (consoles); **printenv**; content of **/etc/profile** and **~/.bash_profile**, **$echo $HISTFILE $HISTSIZE $HISTFILESIZE**, **who**, **w**, **whoami**, **id**). Make 5 screenshots.

```
[ec2-user@ip-172-31-37-166 ~]$ ls -l /dev/tty?
crw--w---- 1 root tty 4, 0 Apr 15 14:22 /dev/tty0
crw--w---- 1 root tty 4, 1 Apr 15 14:22 /dev/tty1
crw--w---- 1 root tty 4, 2 Apr 15 14:22 /dev/tty2
crw--w---- 1 root tty 4, 3 Apr 15 14:22 /dev/tty3
crw--w---- 1 root tty 4, 4 Apr 15 14:22 /dev/tty4
crw--w---- 1 root tty 4, 5 Apr 15 14:22 /dev/tty5
crw--w---- 1 root tty 4, 6 Apr 15 14:22 /dev/tty6
crw--w---- 1 root tty 4, 7 Apr 15 14:22 /dev/tty7
crw--w---- 1 root tty 4, 8 Apr 15 14:22 /dev/tty8
crw--w---- 1 root tty 4, 9 Apr 15 14:22 /dev/tty9
```

```
[centos@ip-172-31-29-230 ~]$ cat /etc/profile
# /etc/profile

# System wide environment and startup programs, for login setup
# Functions and aliases go in /etc/bashrc

# It's NOT a good idea to change this file unless you know what you
# are doing. It's much better to create a custom.sh shell script in
# /etc/profile.d/ to make custom changes to your environment, as this
# will prevent the need for merging in future updates.

pathmunge () {
    case ":${PATH}:" in
        *:"$1":*)
            ;;
        *)
            if [ "$2" = "after" ] ; then
                PATH=$PATH:$1
            else
                PATH=$1:$PATH
            fi
    esac
}

if [ -x /usr/bin/id ]; then
    if [ -z "$EUID" ]; then
        # ksh workaround
        EUID=`/usr/bin/id -u`
        UID=`/usr/bin/id -ru`
    fi
    USER="`/usr/bin/id -un`"
    LOGNAME=$USER
    MAIL="/var/spool/mail/$USER"
fi

# Path manipulation
if [ "$EUID" = "0" ]; then
    pathmunge /usr/sbin
    pathmunge /usr/local/sbin
else
    pathmunge /usr/local/sbin after
    pathmunge /usr/sbin after
fi

HOSTNAME=`/usr/bin/hostname 2>/dev/null`
HISTSIZE=1000
if [ "$HISTCONTROL" = "ignorespace" ] ; then
    export HISTCONTROL=ignoreboth
else
    export HISTCONTROL=ignoredups
fi

export PATH USER LOGNAME MAIL HOSTNAME HISTSIZE HISTCONTROL

# By default, we want umask to get set. This sets it for login shell
# Current threshold for system reserved uid/gids is 200
```

```
[centos@ip-172-31-29-230 ~]$ cat ~/.bash_profile
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
        . ~/.bashrc
fi

# User specific environment and startup programs

PATH=$PATH:$HOME/.local/bin:$HOME/bin

export PATH
```

```
[centos@ip-172-31-29-230 ~]$ printenv
XDG_SESSION_ID=130
HOSTNAME=ip-172-31-29-230.eu-west-3.compute.internal
TERM=xterm
SHELL=/bin/bash
HISTSIZE=10000
SSH_CLIENT=195.140.160.196 53609 25333
SSH_TTY=/dev/pts/0
USER=centos
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=01;05;37;41: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:*.t
7z=01;31:*.zip=01;31:*.z=01;31:*.Z=01;31:*.dz=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=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:*.jpg=01;35:*.jpeg=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:*.ogm=01;35:*.mp4=01;35:*.m4v=01;35:*.mp
4v=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:*.axv=01;35:*.anx=01;35:*.ogv=01;35:*.ogx=01;35:*.aac=01;36:*.au=01;36:*.flac=01;36:*.mid=01;36:*.midi=01;
36:*.mka=01;36:*.mp3=01;36:*.mpc=01;36:*.ogg=01;36:*.ra=01;36:*.wav=01;36:*.axa=01;36:*.oga=01;36:*.spx=01;36:*.xspf=01;36:
MAIL=/var/spool/mail/centos
PATH=/usr/local/bin:/usr/bin:/usr/local/sbin:/usr/sbin:/home/centos/.local/bin:/home/centos/bin
PWD=/home/centos
LANG=en_US.UTF-8
HISTIGNORE=ls:ll:history:w:htop
HISTCONTROL=ignoredups
SHLVL=1
HOME=/home/centos
LOGNAME=centos
SSH_CONNECTION=195.140.160.196 53609 172.31.29.230 25333
LESSOPEN=||/usr/bin/lesspipe.sh %s
XDG_RUNTIME_DIR=/run/user/1000
HISTTIMEFORMAT=%h %d %H:%M:%S
_=/usr/bin/printenv
[centos@ip-172-31-29-230 ~]$
```

```
[centos@ip-172-31-29-230 ~]$ sudo $echo $HISTFILE $HISTSIZE $HISTFILESIZE
sudo: /home/centos/.bash_history: command not found
[centos@ip-172-31-29-230 ~]$ who
centos    pts/0        2020-04-15 19:31 (195.140.160.196)
[centos@ip-172-31-29-230 ~]$ w
 19:36:24 up 5 days,  5:21,  1 user,  load average: 0.00, 0.01, 0.05
USER      TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
centos    pts/0    195.140.160.196  19:31    0.00s  0.00s  0.00s w
[centos@ip-172-31-29-230 ~]$ whoami
centos
[centos@ip-172-31-29-230 ~]$ id
uid=1000(centos) gid=1000(centos) groups=1000(centos),4(adm),10(wheel),190(systemd-journal)
[centos@ip-172-31-29-230 ~]$
```

3. Familiarize yourself with the commands (*uname, hostname, uptime, shutdown, halt, reboot, init…*). Make 5 screenshots.

```
[centos@ip-172-31-29-230 ~]$ uname
Linux
[centos@ip-172-31-29-230 ~]$ hostname
ip-172-31-29-230.eu-west-3.compute.internal
[centos@ip-172-31-29-230 ~]$ uptime
 19:37:19 up 5 days,  5:22,  1 user,  load average: 0.00, 0.01, 0.05
```

```
[centos@ip-172-31-29-230 ~]$ sudo shutdown
Shutdown scheduled for Wed 2020-04-15 19:39:02 EEST, use 'shutdown -c' to cancel.
[centos@ip-172-31-29-230 ~]$
Broadcast message from root@ip-172-31-29-230.eu-west-3.compute.internal (Wed 2020-04-15 19:38:02 EEST):

The system is going down for power-off at Wed 2020-04-15 19:39:02 EEST!

```

```
[ec2-user@ip-172-31-40-34 ~]$ sudo init 1

Broadcast message from ec2-user@ip-172-31-40-34.eu-west-3.compute.internal on pts/0 (Wed 2020-04-15 16:55:35 UTC):

The system is going down to rescue mode NOW!

[ec2-user@ip-172-31-40-34 ~]$
```

4. Familiarize yourself with the help commands (***man, info, find, locate, whereis, less|zless in /usr/share/doc***). Make 5 screenshots.

```
LS(1)                                    User Commands                                    LS(1)

NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION
       List information about the FILEs (the current directory by default).  Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

       Mandatory arguments to long options are mandatory for short options too.

       -a, --all
              do not ignore entries starting with .

       -A, --almost-all
              do not list implied . and ..

       --author
              with -l, print the author of each file

       -b, --escape
              print C-style escapes for nongraphic characters

       --block-size=SIZE
              scale sizes by SIZE before printing them; e.g., '--block-size=M' prints sizes in units of 1,048,576 bytes; see SIZE format below

       -B, --ignore-backups
              do not list implied entries ending with -

       -c     with -lt: sort by, and show, ctime (time of last modification of file status information); with -l: show ctime and sort by name; otherwise: sort
              by ctime, newest first

       -C     list entries by columns

       --color[=WHEN]
              colorize the output; WHEN can be 'never', 'auto', or 'always' (the default); more info below

       -d, --directory
              list directories themselves, not their contents

       -D, --dired
              generate output designed for Emacs' dired mode

       -f     do not sort, enable -aU, disable -ls --color

       -F, --classify
              append indicator (one of */=>@|) to entries

       --file-type
              likewise, except do not append '*'

       --format=WORD
              across -x, commas -m, horizontal -x, long -l, single-column -1, verbose -l, vertical -C

Manual page ls(1) line 1 (press h for help or q to quit)
```

```
[ec2-user@ip-172-31-38-56 ~]$ locate -S
Database /var/lib/mlocate/mlocate.db:
        4,808 directories
        43,682 files
        2,013,879 bytes in file names
        895,654 bytes used to store database
[ec2-user@ip-172-31-38-56 ~]$ find .ssh/
.ssh/
.ssh/authorized_keys
[ec2-user@ip-172-31-38-56 ~]$ whereis file autorized_keys
file: /usr/bin/file /usr/share/file /usr/share/man/man1/file.1.gz /usr/share/man/man1p/file.1p.gz
autorized_keys:
[ec2-user@ip-172-31-38-56 ~]$
```

```
[ec2-user@ip-172-31-38-56 doc]$ less less-458/LICENSE |zless
[ec2-user@ip-172-31-38-56 doc]$
```

```
File: dir        Node: Top        This is the top of the INFO tree

   This (the Directory node) gives a menu of major topics.
   Typing "q" exits, "?" lists all Info commands, "d" returns here,
   "h" gives a primer for first-timers,
   "mEmacs<Return>" visits the Emacs topic, etc.

   In Emacs, you can click mouse button 2 on a menu item or cross reference
   to select it.

* Menu:

Archiving
* Cpio: (cpio).                 Copy-in-copy-out archiver to tape or disk.
* Tar: (tar).                   Making tape (or disk) archives.

Basics
* Common options: (coreutils)Common options.
* Coreutils: (coreutils).       Core GNU (file, text, shell) utilities.
* Date input formats: (coreutils)Date input formats.
* File permissions: (coreutils)File permissions.
                                Access modes.
* Finding files: (find).        Operating on files matching certain criteria.
* ed: (ed).                     The GNU Line Editor.

Compression
* Gzip: (gzip).                 General (de)compression of files (lzw).

Editors
* nano: (nano).                 Small and friendly text editor.

Emacs
* IDN Library: (libidn)Emacs API.
                                Emacs API for IDN functions.

General Commands
* screen: (screen).             Terminal multiplexer.

GNU Gettext Utilities
* autopoint: (gettext)autopoint Invocation.
                                Copy gettext infrastructure.
* envsubst: (gettext)envsubst Invocation.
                                Expand environment variables.
* gettextize: (gettext)gettextize Invocation.
                                Prepare a package for gettext.
* gettext: (gettext).           GNU gettext utilities.
* ISO3166: (gettext)Country Codes.
                                ISO 3166 country codes.
* ISO639: (gettext)Language Codes.
                                ISO 639 language codes.
* msgattrib: (gettext)msgattrib Invocation.
                                Select part of a PO file.
* msgcat: (gettext)msgcat Invocation.
                                Combine several PO files.
* msgcmp: (gettext)msgcmp Invocation.
-----Info: (dir)Top, 302 lines --Top----------------------------------------
Welcome to Info version 5.1. Type h for help, m for menu item.
```

```
                          Less License
                          ------------

Less
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(END)
```