Linux Programming: Assignment-10: 23-11-2025

NAME- DIVYA SHANKAR

ROLL NO- 16

USN- ENG24CY0100

CLASS- CYBER SECURITY

SECTION- C

My USN is 100, my commands are
finger – Display user info(basic)
as – GNU assembler (advanced)

1.What is the said commands (little history, invention, authors of the command)?

Ans:

1.Command: finger

Finger command in linux is used to display information about system users.it shows detail such as login name,real name,home directory,shell,idle time and last login time

History: it was developed as early part of linux os in 1970s

The commands author is Mark Horton in 1977 at university of southern California

The purpose was created to provide a simple way for users of liunx to see who else was logged in the same system and to view contact information

License:
Typically included as part of Unix/Linux distributions, open source under various Unix/Linux licenses.

2.Command: as
As is GNU assembly language source code into machine code it is a part of GNU Binutils package and is widely used In linux for low level programming
History :
as command was developed as part of GNU project in 1980s it author is Richard Stallman(RMS) started the GNU project in 1983
its purpose is to provide a free open source assembler compatible with unix system allowing developers to write and assemble programs for diffrenr architectures
license: GNU General Public License
It allows programmers and system developers to translate assembly code into machine-readable object files, making it a critical tool for low-level system programming, kernel development, and embedded systems work.

2. Why the particular commands are useful for System administrator?
Ans
Command : finger
Finger command allows system administrators to quickly view information about users logged into the system
It helps monitor actvity,check idle times,and manage user accounts efficiently
It is useful as it shows all currently looged in users,their login name and terminlas

Helps in administrators track who is active on the system at any time displays last login time and date for a specific users
Useful to monitor user activity detect unused accounts or investigate security issues
On servers with multiple users finger helps administer accounts and session efficiently can be used to verify account usage and detect unauthorized access

Command: as
as command is GNU assembler ,used to convert assembly language code into machine readable object files it is essential for system level programming, kernel development and embedded system work
it is useful as it allows administartors and developers to write low level programs that interacts directly with hardware
critical for OS kernel modules ,drivers and bootloaders
the object files generated by as can be linked with other code using 1d to create executables. Enable custom binaries for system tasks or optimization
System administrators working on security modules or patches can use as to write small, secure routines in assembly.
Helps in fine-grained control over system operations that high-level languages cannot provide.
Helps in debugging low-level issues by letting programmers inspect assembly code.
Optimized assembly can improve performance of critical system utilities.
The as command is useful because it allows system administrators and programmers to write, assemble, and manage low-level system code, create custom binaries, work on kernel modules, and optimize system performance across multiple architectures.

3. How these said commands are working? Give proper example.

Ans

Command: finger

Finger command works by reading user account information from the system files and optionally from networks services

Local Users:

Reads /etc/passwd for user login names and home directories.

Checks .plan, .project, and .forward files in users' home directories for additional info.

Remote Users:

If you specify a username@host, it can connect over the network (using the finger protocol) to get info about users on a remote system (if the remote system allows it).

Output Formatting:

It displays user information in a **structured table**, including login name, full name, home directory, shell, last login, and idle time.

Syntax : finger [options] [username]

Example

Finger

Output:

Login: divyashankar Name: Divya Shankar

Directory: /home/divyashankar Shell: /bin/bash

On since Thu Nov 21 09:05 (IST) on pts/0

No mail.

No Plan.

The finger command works by reading local system user files and login records, optionally querying remote systems, and displays detailed user information including login name, home directory, shell, last login, and idle time. It's a simple yet

effective way for system administrators to monitor and manage users.

Command: as
The command as takes assmbly language source code as input and produces machine code n that form of object files
Assembly code is human readable representation of CPU instruction
as converts these instruction into binary code that the computer's processor can execute the resulting object files can later be linked wit other object files using 1d linker to create executable programs
The as command converts human-readable assembly code into machine-readable object files. It is essential for low-level programming, kernel development, and system optimization. Using as with ld allows system administrators and programmers to build executable programs directly from assembly language.
Syntax: as [options] sourcefile.s -o outputfile.o
Example:
create a file called hello.s
Output:

```
.global _start

_start:
    mov $1, %rax        # syscall: write
    mov $1, %rdi        # stdout
    mov $msg, %rsi      # message
    mov $18, %rdx       # length
    syscall

    mov $60, %rax       # syscall: exit
```

```
    xor %rdi, %rdi
    syscall

.section .data
msg:
    .ascii "Hello, Divya Shankar\n"
```

Assemble and link:

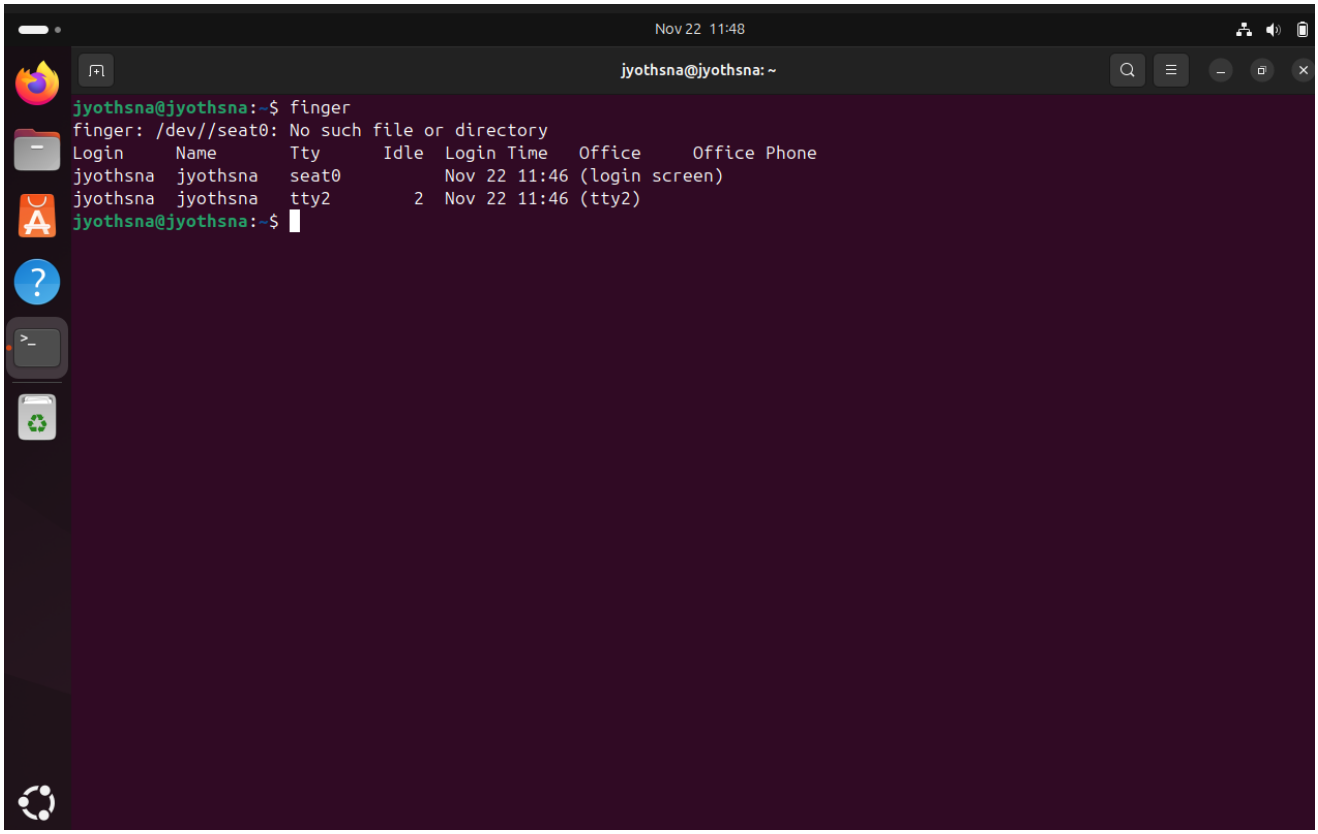
```
as hello.s -o hello.o
ld hello.o -o hello
./hello
```

Output: Hello, Divya Shankar

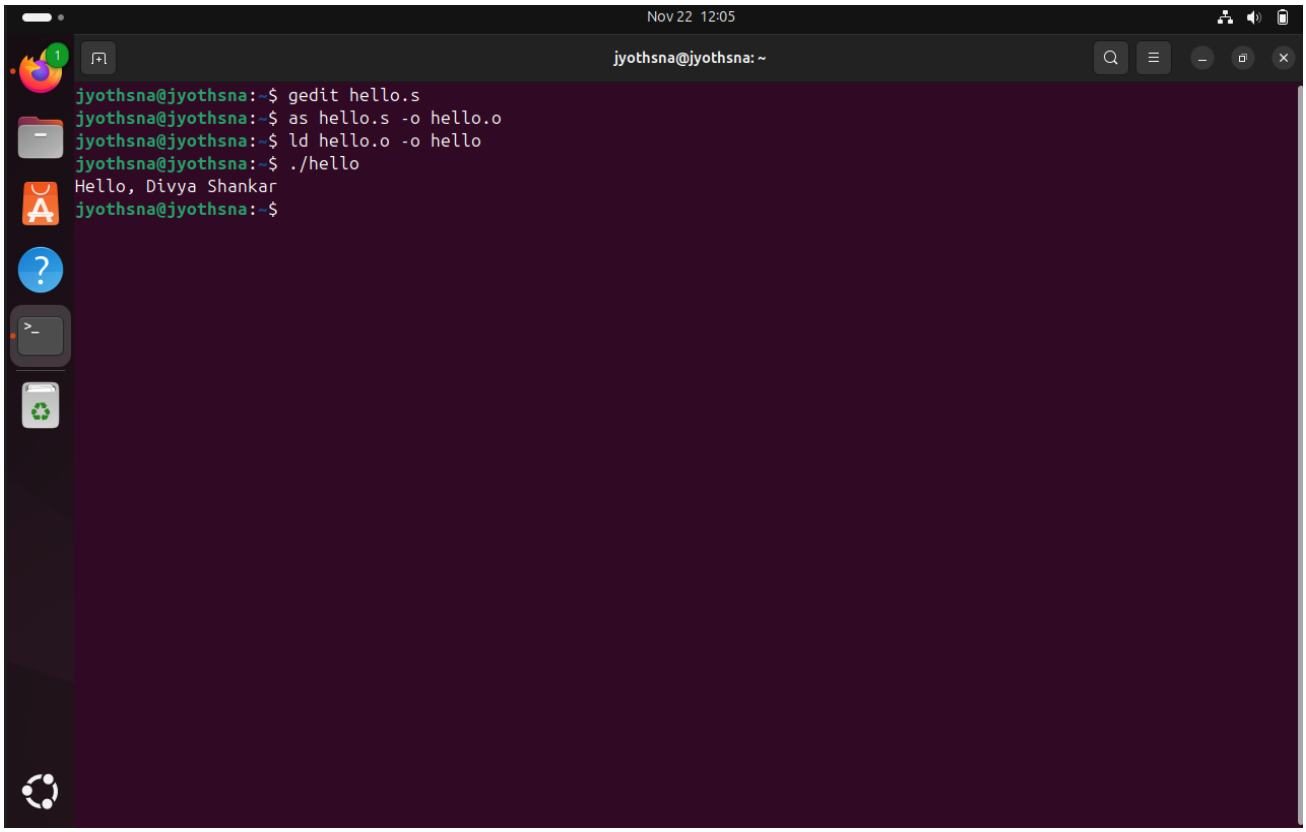
4. Few snapshots of the command execution with proper illustration.

Ans

Command finger :



Command : as



5. At least elaborate five to six Option and Flags related to the said command. Give sources for detailed flags and options.

Ans:

Command: finger

Few options to use with finger command can be

1. -l this stands for long format it displays detailed information about the user including home directory shell and login time idle time office info and project/plan files
2. -s short format this displays concise information typically just login name, full name ,terminal and idle time useful for quick glance without full details

3. -m match login name this option matches the username exacly ignoring others users with similar names helps prevent confusion on multi user system
4. -p this displays contents of the .plan and .project files in the users home directory useful when only login information is required
5. username@host Fetches user information from a remote system over the finger protocol, if allowed. Useful for administrators managing networked or multi-system environments
6. -h Does not display the **column headers** in the output,Useful when parsing output programmatically

Source for detailed flags and option are:
finger Command in Linux
The “finger” Command in Linux [6 Practical Examples]
Finger command in Linux with Examples - GeeksforGeeks

Command: as
Flags to use with as can be

1. -0<file> Sets the **output object file name** instead of the default a.out. Essential for creating object files for linking later.

2. -g generates debugging information Includes debug information in the object file.Useful for debuggers like gdb to inspect the assembly during debugging.

3. -a Produces an assembly listing that shows both source and machine code.helpful for learning or verifying the translation from assembly to object code.

4. –version Displays the version of GNU assembler installed Useful to check compatibility or document the tool used

5. -v Provides verbose output during assembly. Useful for diagnosing assembly errors or warnings.

Source and detailed flags
as Command in Linux
as(1) - Linux manual page
Utilizing the Portable GNU Assembler (as) (with examples)
as command in linux with examples - GeeksforGeeks
can us the command man also