

```
1 - USER, PASS, SYST, FEAT, PWD, TYPE, PASV, LIST, CWD, STOR, RETR
2 - 220, 331, 230, 215, 211, 257, 200, 227, 125, 226, 250
3 - username: Administrator, password: napier
4 - 111.png
5 - manual.txt
6 - frame 21
7 - 192.168.47.134
8 - frame 145
9 - 227 = "Entering Passive Mode"
10 -
```

[illegible]

```

Reading package lists... 0%
Reading package lists... 100%
Reading package lists... Done
Building dependency tree... 0%
Building dependency tree... 0%
Building dependency tree... 50%
Building dependency tree... 50%
Building dependency tree... Done
Reading state information... 0%
Reading state information... 0%

```

Reading state information... Done
The following packages were automatically installed and are no longer required:
libdrm-nouveau2 libdrm-radeon1 libgl1-amd-gpu-dri libglapi-mesa libllvm17t64
libxcb-dri2-0

Use 'apt autoremove' to remove them.

The following NEW packages will be installed:

tnftp

0 upgraded, 1 newly installed, 0 to remove and 95 not upgraded.

Need to get 103 kB of archives.

After this operation, 239 kB of additional disk space will be used.

#[33m

0% [Working]#[0m

Get:1 http://archive.ubuntu.com/ubuntu noble/main amd64 tnftp amd64 20230507-2build3 [103 kB]

#[33m

11% [1 tnftp 14.2 kB/103 kB 14%]#[0m#[33m

100% [Working]#[0m

Fetched 103 kB in 1s (138 kB/s)

#7#[0;14r#8#[1ASelecting previously unselected package tnftp.

(Reading database ...

(Reading database ... 5%

(Reading database ... 10%

(Reading database ... 15%

(Reading database ... 20%

(Reading database ... 25%

(Reading database ... 30%

(Reading database ... 35%

(Reading database ... 40%

(Reading database ... 45%

(Reading database ... 50%

(Reading database ... 55%

(Reading database ... 60%

(Reading database ... 65%

(Reading database ... 70%

(Reading database ... 75%

(Reading database ... 80%

(Reading database ... 85%

(Reading database ... 90%

(Reading database ... 95%

(Reading database ... 100%

(Reading database ... 49502 files and directories currently installed.)

Preparing to unpack .../tnftp_20230507-2build3_amd64.deb ...

#7#[15;0f#[42m#[30mProgress: [0%]#[49m#[39m

[.....

.....] #8#7#[15;0f#[42m#[30mProgress: [20%]#[49m#[39m

[#####

.....

.....] #8Unpacking tnftp (20230507-2build3) ...

#7#[15;0f#[42m#[30mProgress: [40%]#[49m#[39m

[#####

.....

.....] #8Setting up tnftp (20230507-2build3) ...

#7#[15;0f#[42m#[30mProgress: [60%]#[49m#[39m

[#####

.....

.....] #8update-alternatives: using /usr/bin/tnftp to

provide /usr/bin/ftp (ftp) in auto mode

#7#[15;0f#[42m#[30mProgress: [80%]#[49m#[39m

[#####

#####.....
.....] #8Processing triggers for man-db (2.12.0-
4build2) ...

#7#[0;15r#8#[1A#[J#[?2004h#]0;root@ThinkpadP1V2: /mnt/c/Users/Rohan/netprog-lab7
root@ThinkpadP1V2:/mnt/c/Users/Rohan/netprog-lab7# apt install
tnftp#####ftp ftp.ncbi.nlm.nih.gov

#[?2004l

Trying 130.14.250.7:21 ...

Connected to ftp.wip.ncbi.nlm.nih.gov.

220-

This warning banner provides privacy and security notices consistent with applicable federal laws, directives, and other federal guidance for accessing this Government system, which includes all devices/storage media attached to this system. This system is provided for Government-authorized use only.

Unauthorized or improper use of this system is prohibited and may result in disciplinary action and/or civil and criminal penalties. At any time, and for any lawful Government purpose, the government may monitor, record, and audit your system usage and/or intercept, search and seize any communication or data transiting or stored on this system. Therefore, you have no reasonable expectation of privacy. Any communication or data transiting or stored on this system may be disclosed or used for any lawful Government purpose.

220 FTP Server ready.

Name (ftp.ncbi.nlm.nih.gov:root): anonymous

331 Anonymous login ok, send your complete email address as your password

Password:

230 Anonymous access granted, restrictions apply

Remote system type is UNIX.

Using binary mode to transfer files.

ftp> pwd

Remote directory: /

ftp> ls

229 Entering Extended Passive Mode (|||50453|)

150 Opening BINARY mode data connection for file list

dr-xr-xr-x	4	ftp	anonymous	4096	Oct	31	02:48	1000genomes
-r--r--r--	1	ftp	anonymous	10738466816	Mar	22	2025	10GB
-r--r--r--	1	ftp	anonymous	1074790400	Mar	22	2025	1GB
lr--r--r--	1	ftp	anonymous	29	Mar	21	2025	asn1-converters -> toolbox/ncbi_tools/converters
dr-xr-xr-x	12	ftp	anonymous	188416	Feb	8	2022	bigwig
dr-xr-xr-x	5	ftp	anonymous	4096	Oct	30	09:15	bioproject
dr-xr-xr-x	2	ftp	anonymous	4096	Oct	30	15:25	biosample
dr-xr-xr-x	13	ftp	anonymous	4096	Oct	31	02:48	blast
dr-xr-xr-x	3	ftp	anonymous	4096	May	3	2023	cgap
dr-xr-xr-x	4	ftp	anonymous	4096	May	17	2023	cn3d
dr-xr-xr-x	7	ftp	anonymous	122880	Oct	31	02:48	comparative-genome- viewer
dr-xr-xr-x	29	ftp	anonymous	4096	Oct	31	02:48	dbgap
dr-xr-xr-x	2	ftp	anonymous	4096	May	3	2023	diffexpIR-notebook
dr-xr-xr-x	12	ftp	anonymous	4096	May	3	2023	entrez
dr-xr-xr-x	7	ftp	anonymous	4096	Feb	8	2022	epigenomics
dr-xr-xr-x	4	ftp	anonymous	4096	Oct	5	2023	eqtl
dr-xr-xr-x	6	ftp	anonymous	4096	May	3	2023	fa2htgs
-r--r--r--	1	ftp	anonymous	3262	Mar	21	2025	favicon.ico
-r--r--r--	1	ftp	anonymous	106	Mar	21	2025	fufuter.html
dr-xr-xr-x	14	ftp	anonymous	806912	Oct	31	02:48	genbank
dr-xr-xr-x	6	ftp	anonymous	4096	Feb	8	2022	gene
dr-xr-xr-x	16	ftp	anonymous	49152	Oct	31	02:48	genomes
dr-xr-xr-x	1073741824	ftp	anonymous	0	Oct	29	05:01	geo
dr-xr-xr-x	4	ftp	anonymous	4096	Oct	31	02:48	giab
dr-xr-xr-x	25	ftp	anonymous	8192	May	3	2023	hapmap
dr-xr-xr-x	22	ftp	anonymous	4096	Aug	6	19:06	hmm
dr-xr-xr-x	15	ftp	anonymous	4096	Nov	6	2024	mmdb
dr-xr-xr-x	8	ftp	anonymous	258048	Oct	31	02:48	ncbi-asn1

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dr-xr-xr-x  5 ftp      anonymous      8192 Apr 27  2023 nist-immsa
dr-xr-xr-x  3 ftp      anonymous      12288 Sep  1  2021 osiris
dr-xr-xr-x 10 ftp      anonymous      4096 Oct 31 02:48 pathogen
dr-xr-xr-x 176 ftp     anonymous      12288 Aug 21 16:49 pub
dr-xr-xr-x  27 ftp     anonymous      8192 Sep 30 13:42 pubchem
dr-xr-xr-x  45 ftp     anonymous      4096 Oct 21 04:49 pubmed
dr-xr-xr-x  4 ftp      anonymous      4096 Jun 16 21:45 rapt
-r--r--r--  1 ftp      anonymous      2136 Mar 21  2025 README.ftp
dr-xr-xr-x 1073741824 ftp      anonymous      40 Oct 15 01:11 ReferenceSamples
dr-xr-xr-x  22 ftp     anonymous      4096 Sep  5 18:29 refseq
dr-xr-xr-x  57 ftp     anonymous      4096 Feb  8  2022 repository
-r--r--r--  1 ftp      anonymous        26 Mar 21  2025 robots.txt
dr-xr-xr-x  8 ftp      anonymous      4096 Feb  8  2022 SampleData
dr-xr-xr-x  3 ftp      anonymous      4096 Oct 31 02:48 seqc
dr-xr-xr-x  3 ftp      anonymous      4096 May  3  2023 sequin
dr-xr-xr-x  4 ftp      anonymous      4096 May  3  2023 sky-cgh
dr-xr-xr-x 12 ftp     anonymous      4096 Oct 31 02:48 snp
dr-xr-xr-x 23 ftp     anonymous      4096 Oct 31 02:48 sra
dr-xr-xr-x  2 ftp     anonymous      4096 Jan 12  2024 tech-reports
dr-xr-xr-x 11 ftp     anonymous      4096 Mar 25  2025 toolbox
dr-xr-xr-x  8 ftp      anonymous      4096 May  3  2023 tpa
dr-xr-xr-x  5 ftp      anonymous      4096 May  3  2023 variation
226 Transfer complete
ftp> cd pub/pmc/oa_pdf/01/01
250 CWD command successful
ftp> ls
229 Entering Extended Passive Mode (|||50113|)
150 Opening BINARy mode data connection for file list
-r--r--r--  1 ftp      anonymous  1199789 Apr  1  2025 1008-9292-2025-54-1-
10.PMC11956856.pdf
-r--r--r--  1 ftp      anonymous   997021 Dec  7  2022
10.1177_18632521221129368.PMC9723872.pdf
-r--r--r--  1 ftp      anonymous   554901 Feb 23  2019
10.1177_2050313X19830817.PMC6378465.pdf
-r--r--r--  1 ftp      anonymous   456044 Sep  1  2017 1349-7235-56-
1943.PMC5577067.pdf
-r--r--r--  1 ftp      anonymous  2603592 Jun  6 09:30
41598_2025_Article_1050.PMC12137947.pdf
-r--r--r--  1 ftp      anonymous   419996 Aug 10  2020 ejtm-30-2-
8811.PMC7385686.pdf
-r--r--r--  1 ftp      anonymous   4035308 Feb 25  2021 indmedgaz70474-
0023b.PMC5175876.pdf
-r--r--r--  1 ftp      anonymous    253322 May  7  2019 JDI-10-
745.PMC6497586.pdf
-r--r--r--  1 ftp      anonymous   360087 Mar  8  2018 je1701321.PMC2189360.pdf
-r--r--r--  1 ftp      anonymous   2263737 Jul 23  2016
JGP_201511456.PMC4621752.pdf
-r--r--r--  1 ftp      anonymous   3449260 Sep 15  2021 JISPCD-6-
359.PMC4981939.pdf
-r--r--r--  1 ftp      anonymous   3456922 Mar  9  2018 kjr-19-
358.PMC5840066.pdf
-r--r--r--  1 ftp      anonymous   158202 Apr 16  2025 main.PMC11999300.pdf
-r--r--r--  1 ftp      anonymous   370765 Jan 19  2018 main.PMC5757905.pdf
-r--r--r--  1 ftp      anonymous   244642 Jun  6  2020 main.PMC7264945.pdf
-r--r--r--  1 ftp      anonymous  2398283 Sep 29  2021 main.PMC8474472.pdf
-r--r--r--  1 ftp      anonymous   199669 Jun  4  2024 MDC3-11-
704.PMC11145134.pdf
-r--r--r--  1 ftp      anonymous   922364 Nov  6  2024 medi-103-
e40311.PMC11537656.pdf
-r--r--r--  1 ftp      anonymous   1512666 Dec 22  2017 medscimonit-23-
5876.PMC5736328.pdf
-r--r--r--  1 ftp      anonymous   2406300 Jul 13  2019 medscimonit-25-
4590.PMC6599421.pdf
-r--r--r--  1 ftp      anonymous   1372206 Feb  4  2021 ol-21-02-

```

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12421.PMC7798101.pdf
-r--r--r-- 1 ftp anonymous 1049812 May 11 2022 RA-008-
C8RA07166G.PMC9086543.pdf
-r--r--r-- 1 ftp anonymous 856411 May 10 2022 RA-009-
C9RA08068F.PMC9076674.pdf
-r--r--r-- 1 ftp anonymous 983736 May 7 2022 RA-010-
D0RA09635K.PMC9058379.pdf
-r--r--r-- 1 ftp anonymous 712341 Apr 20 2021 rccm.202003-
0693LE.PMC7301735.pdf
-r--r--r-- 1 ftp anonymous 1438713 Oct 12 2023
RSSN_20_2267536.PMC10566444.pdf
-r--r--r-- 1 ftp anonymous 1390073 Apr 27 2023 WJCC-11-
2386.PMC10130989.pdf
-r--r--r-- 1 ftp anonymous 1882736 Nov 22 2019 WJO-10-
371.PMC6854053.pdf
-r--r--r-- 1 ftp anonymous 1087645 Jul 7 2023 WJSC-15-
548.PMC10324504.pdf
-r--r--r-- 1 ftp anonymous 7253098 Aug 20 09:34 zr-46-3-
634.PMC12361896.pdf
226 Transfer complete
ftp> ascii
MC5757905.ascii.pdf200 Type set to A
ftp> get main.PMC5757905.pdf main.PMC5757905.ascii.pdf
local: main.PMC5757905.ascii.pdf remote: main.PMC5757905.pdf
229 Entering Extended Passive Mode (|||50335|)
150 Opening ASCII mode data connection for main.PMC5757905.pdf (370765 bytes)

0 0.00 KiB/s
363 KiB 1.84 MiB/s
226 Transfer complete
371799 bytes received in 00:00 (1.53 MiB/s)
ftp> binary
et main.PMC5757905.pdf main.PMC5757905.bin.pdf200 Type set to I
ftp> get main.PMC5757905.pdf main.PMC5757905.bin.pdf
local: main.PMC5757905.bin.pdf remote: main.PMC5757905.pdf
229 Entering Extended Passive Mode (|||50271|)
150 Opening BINARY mode data connection for main.PMC5757905.pdf (370765 bytes)

0% |
| 0 0.00 KiB/s --:-- ETA
100% |
*****
*****
**| 362 KiB 2.14 MiB/s 00:00 ETA
226 Transfer complete
370765 bytes received in 00:00 (1.74 MiB/s)
ftp> bye
221 Goodbye.
#[?2004h#]0;root@ThinkpadP1V2: /mnt/c/Users/Rohan/netprog-lab7
root@ThinkpadP1V2:/mnt/c/Users/Rohan/netprog-lab7# exit
#[?2004l
exit

```

Script done on 2025-10-30 23:38:05-04:00 [COMMAND_EXIT_CODE="0"]

11 - The binary file opened normally; the ASCII version reported "file damaged" in Acrobat.
MD5 checksums confirmed the files differ with Binary outputting "31a0f9b7854d5c50f9c65bb3b09e5b91" and ASCII outputting "e2bd0a9e2f329bbd7645e253ed6f3324". This is because Binary mode sends data unchanged, preserving all byte values. ASCII mode converts end-of-line bytes for text files, which corrupts binary PDFs. Therefore, binary mode must be used for non-text files.