Network Programming
Lab 6
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1. Ftp commands used:
   USER Administrator
   PASS napier
   SYST
   FEAT
   PWD
   TYPE
   PASV
   LIST
   CWD
   STOR
   RETR

2. Returned ftp codes:
   Response code: Service ready for new user (220)
   Response code: User name okay, need password (331)
   Response code: User logged in, proceed (230)
   Response code: NAME system type (215)
   Response code: System status, or system help reply (211)
   Response code: PATHNAME created (257)
   Response code: Command okay (200)
   Response code: Entering Passive Mode (227)
   Response code: Data connection already open; transfer starting (125)
   Response code: Closing data connection (226)
   Response code: Service ready for new user (220)
   Response code: User name okay, need password (331)
   Response code: User logged in, proceed (230)
   Response code: Requested file action okay, completed (250)
   Response code: PATHNAME created (257)
   Response code: Command okay (200)
   Response code: Entering Passive Mode (227)
   Response code: Data connection already open; transfer starting (125)
   Response code: Closing data connection (226)
   Response code: Entering Passive Mode (227)
   Response code: Data connection already open; transfer starting (125)
   Response code: Closing data connection (226)
   Response code: Requested file action okay, completed (250)
   Response code: PATHNAME created (257)
   Response code: Entering Passive Mode (227)
   Response code: Data connection already open; transfer starting (125)
   Response code: Closing data connection (226)
   Response code: Requested file action okay, completed (250)
   Response code: PATHNAME created (257)

Response code: Command okay (200)
Response code: Entering Passive Mode (227)
Response code: Data connection already open; transfer starting (125)
Response code: Closing data connection (226)

3. Username: Administrator
   Password: napier

4. Uploaded file: 111.png
5. Downloaded file: manual.txt
6. Packet 21
7. TCP port 1078
8. Files on server: 1.docx, manual.txt
9. TCP port in use:
   `(192,168,47,134,4,54)` `Passive port: 1078`,
   256*(second last) + (last) = port
   256 * 4 + 54 = 1078

Part 2

10.

```
Connected to ftp.cdc.gov.
220 Microsoft FTP Service
Name (ftp.cdc.gov:anisha): anonymous
331 Anonymous access allowed, send identity (e-mail name) as password.
Password:
230 User logged in.
ftp> cd  pub/FOIAREQ
250 CWD command successful.


ftp> ascii
200 Type set to A.
ftp> get 177001-508.pdf as 177001-508-ascii.pdf
200 PORT command successful.
125 Data connection already open; Transfer starting.
WARNING! 429 bare linefeeds received in ASCII mode
File may not have transferred correctly.
226 Transfer complete.
84054 bytes received in 0.145 seconds (565 kbytes/s)
ftp> binary
200 Type set to I.
ftp> get 177001-508.pdf as 177001-508-bin.pdf
200 PORT command successful.
125 Data connection already open; Transfer starting.
226 Transfer complete.
84054 bytes received in 0.141 seconds (583 kbytes/s)
ftp> quit
221 Goodbye.
```

11. The two files look the same except for a slight difference in the image in the upper left corner of the first page. The binary mode's image is completely intact while the ascii mode's had some corruption at the bottom. The binary file was slightly larger at 84,054 bytes with the ascii's at 83,961 bytes.

```
-rw-r--r-- 1 nate nate 83961 Oct 28 20:13 177001-508-ascii.pdf
-rw-r--r-- 1 nate nate 84054 Oct 28 20:12 177001-508-binary.pdf
```

This is due to how in ascii mode works for FTP, the protocol takes end of line returns into account and will modify the data in the file. The Binary file is larger so it it possible the file is stored with Windows end of line signifiers ('\r\n'). The file was downloaded to a Manjaro system that uses '\n' end of line return. When requested it changed all the end of line returns to '\n.' It must have done this on all lines, even the one with the image and this is why the ascii version is smaller and the image does not render properly.