Lab Rules

1. **Lab File Naming Convention**
   - Student's in CPT227 should use the following naming convention when submitting their lab assigments:
     Lastname_Firstname_LabCHP-NUM_name_of_the_lab_as instructed_in_the_textbook.py
   - Example, for Lab01-2, here is the correct file name for the file to be submitted in Blackboard by me:
     Sanders_Beau_Lab01-2_towers_of_hanoi.py
   - Data files should follow the naming convention in the textbook and restated in each lab in Blackboard with no other changes.
   - There will be point deductions for labs submitted with incorrect file names

2. **Documentation Guidelines**
   - **Follow these instructions for all coding labs in CPT227**; students not following these instructions for documentation will have points deducted from non-compliant lab submissions; documenting programming code files is an important part of learning how to become a programmer
   - Beginning with Lab01-1, all lab program and module files (.py) must be correctly documented
   - **Program and module files (.py pronounced "pie") must have the following documentation**:
     - The **student's name, date submitted, course-section number, and lab number** in the comments at the beginning of the file; for example:
       `#!/usr/bin/env python3` [this is a required line used to define the interpreter]
       `# Jane Doe, September 6, 2025, CPT227-W01, Lab01-1`
     - After the line containing the student's name there should be a comment (starts with #) **explaining what the program or module file is designed to do**
     - All functions and blocks of code should be preceded with a comment line (starts with #) to **explain or define what the function or block of code is designed to accomplish**; students are expected to document the code provided by the textbook publisher; do not assume the comments in the textbook provided files are sufficient, students should write their own documentation
     - **Data files (.txt, .csv, and .bin) should NOT have any documentation comments lines** because that could result in causing the related program or module to not run properly

3. **Lab Output Screen Snip with Student's Name and Run Date/Time**
   - Students in CPT227 are required to add the following code at the beginning of each coding lab, above the header for the program; replace Jane Doe with your first and last names:

```
import datetime
print(f"Student Name: Jane Doe")
labtime = datetime.datetime.now()
print (f"Lab Time: {labtime}")
```

- Students are required to submit a screen snip of their lab code output in order to get credit for the lab
- An example of a student's lab with the required code is at the end of this document.
- Be sure to replace "Jane Doe" with your first name and last name.
- Be sure to capture the beginning and ending prompts in IDLE.
- Here is an example of a good output screen snip for the example lab in this document:

```
Python 3.13.3 (tags/v3.13.3:6280bb5, Apr  8 2(
AMD64)] on win32
Enter "help" below or click "Help" above for r

= RESTART: C:\Users\beaus\OneDrive\Documents\(
187_LabRules\Doe_Jane_towers_of_hanoi.py
Student Name: Jane Doe
Lab Time: 2025-09-06 13:59:32.663242

**** TOWERS OF HANOI ****

Enter number of disks: 3

    move_disk(n=3, src=A, dest=C, temp=B)
    move_disk(n=2, src=A, dest=B, temp=C)
    move_disk(n=1, src=A, dest=C, temp=B)
    move_disk(n=0, src=A, dest=B, temp=C)
Move disk 1 from A to C
    move_disk(n=0, src=B, dest=C, temp=A)
Move disk 2 from A to B
    move_disk(n=1, src=C, dest=B, temp=A)
    move_disk(n=0, src=C, dest=A, temp=B)
Move disk 1 from C to B
    move_disk(n=0, src=A, dest=B, temp=C)
Move disk 3 from A to C
    move_disk(n=2, src=B, dest=C, temp=A)
    move_disk(n=1, src=B, dest=A, temp=C)
    move_disk(n=0, src=B, dest=C, temp=A)
Move disk 1 from B to A
    move_disk(n=0, src=C, dest=A, temp=B)
Move disk 2 from B to C
    move_disk(n=1, src=A, dest=C, temp=B)
    move_disk(n=0, src=A, dest=B, temp=C)
Move disk 1 from A to C
    move_disk(n=0, src=B, dest=C, temp=A)

All disks have been moved.
```

4. Screen Snipping Tool Suggestions

- Students in CPT227 may use any screen snipping tool they prefer. Students will have to submit their CPT227 lab output as a **PNG image file** Here are three suggestions for snipping tools.
- **Snip and Sketch in Windows 10 and 11:** This tool is the more advanced version of the Snipping Tool from Windows 7. Snip and Sketch is a free tool and is well documented on the internet. Here is a video that explains how it works: https://youtu.be/OO0aS7gh3Rg. Students should use the default rectangle mode and save the command output lines including the command prompts at the beginning and end of the command as a PNG image file. Do NOT save and submit the whole screen. Only submit the output lines as specified in the Blackboard lab instructions. Follow the directions below.

- **Snipping Tool in Windows 10:** This is the original Snipping Tool that was introduced years ago. It works great and is free in Windows 10. The Windows Snipping Tool is also well documented on the internet. Here is another YouTube video that shows you how it works: https://youtu.be/5sphoFKPQDw. Students should save the command output lines including the command prompts at the beginning and end of the command as a PNG image file. Do NOT save and submit the whole screen. Only submit the output lines as specified in the Blackboard lab instructions. Follow the directions below.
- **Snagit from TechSmith:** This is a full featured screen capturing tool that creates images and videos. This tool is NOT free. Your instructor has been using it for years. Snagit is suggested, but NOT required. For more information go to this link: https://www.techsmith.com/screen-capture.html.
- **Example of a lab file that is well documented and shows the student's full understanding of the code**:

```
#!/usr/bin/env python3

# Jane Doe, September 6, 2025, CPT227-W01, Lab01-1

# Program: Test the Towers of Hanoi puzzle
# Purpose: Modify the Towers of Hanoi puzzle by adding a print statement
#          that traces the calls on the stack using recurursion in the
#          move_disk function
#
# Associated file: python/exercises/ch13/towers_of_hanoi.py

import datetime
print(f"Student Name: Jane Doe")
labtime = datetime.datetime.now()
print(f"Lab Time: {labtime}")

print()

def move_disk(n, src, dest, temp):
    #add print statement to trace calls on the stack during recursion
    print("    move_disk(n={:d}, src={:s}, dest={:s}, temp={:s})"
          .format(n, src, dest, temp))
    if n == 0:
        return
    else:
        #recursion of move_disk function
        move_disk(n-1, src, temp, dest)
        print("Move disk", n, "from", src, "to", dest)
        move_disk(n-1, temp, dest, src)

def main():
    #input disks to use in this program
    print("**** TOWERS OF HANOI ****")
    print()
    num_disks = int(input("Enter number of disks: "))
    print()

    #run the move_disk function showing recursion
    move_disk(num_disks, "A", "C", "B")

    print()
    print("All disks have been moved.")

#check to see if this is the main module
if __name__ == "__main__":
    main()
```

- **Video tutorial about documenting CPT227 lab coding files** (requires CPT227 shared password - cpt227/recursion): https://beausanders.org/CPT227/content/videos/How_to_Document_CPT227_Labs_220831_1052.mp4

5. **Data Files and Modules Needed for Labs To Run Properly**
    - **IMPORTANT**: When submitting labs, it is each CPT227 student's responsibility to include everything that is needed to grade the labs. This includes any data files (.txt, .csv, and .bin) created by your programs or read by your programs. This also includes module files (.py). If a student does not include the required data files, they will be graded accordingly.

6. **No ZIP Files**
    - CPT227 students will NOT be submitting any lab exercises in compressed ZIP files. If a student needs to submit multiple lab files, then attach each file separately to the Blackboard lab assignment.

Please email your instructor if you have any questions about CPT227 Labs and how to submit them.

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