11210CS 543200 Advanced UNIX Programming

Assignment 7 (5 pts)

Due: Oct 14, 2023, at 23:59:59

**What to hand in**

1. Your implementation code. You should name it “**assignment7.c**”.
2. A makefile that can compile your code. You should name it “**Makefile**”.
3. A report that contains the answer to the questions, screenshots of your results, and explanations of how you implemented your code. You should name it “***Group\_id*.pdf**”.
4. Please upload all the code files separately and the pdf (do not zip them) to eeclass.

**Notice**

1. Please name your file properly; 2 pts will be taken out for incorrectly-named files.
2. Late submission is not allowed. You will receive 0 point in that case.
3. Plagiarism is not allowed. We will pass your source codes through a tool called “moss”, which is an anti-plagiarism service provided by Stanford University to determine the similarity of programs. If your program has > 20% similarity with your classmates, you will receive 0 point; no exception will be made. (Hint: Please do not share your code with fellow students. Discuss with them instead.)

**Specifications**

Write a small program that calls fork and has the child create a new session. Verify that the child becomes a process group leader and that the child no longer has a controlling terminal.

In your implementation, you should:

1. **(1 pt)** Fork a new child.
2. **(1 pt)** Create a new session in the child process.
3. **(1 pt)** Verify that the child is a process group leader and no longer has a controlling terminal by using ps command to print PID, PGRP, and TPGID.
4. **(2 pts)** Explain why the child process does not have a controlling terminal. What are PID, PGRP, and TPGID values in this case? What are their meanings? Please answer these questions in your report.

**Additional Notes**

1. **Printing the words directly is forbidden**! We will check your source codes.
2. All of your code should be implemented within one .c file.
3. **Every output of your codes should follow the same format as the sample outputs** given below, otherwise, you will not get the points.

**Sample Output**

PID PGRP TPGID

[PID number] [PGRP number] [PGRP number]