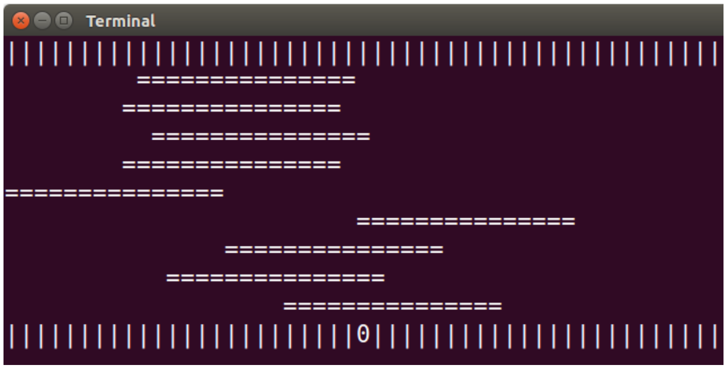
CSC3150 Assignment 2

In Assignment 2, you are required to complete the multithread program to implement the game “Frog crosses river”.

Game rules:

- A river has logs floating on it, and a frog must cross the river by jumping on the logs as they pass by.
- Objects
  - Log =================
  - Frog 0
  - River bank ||||||||||||||||||||



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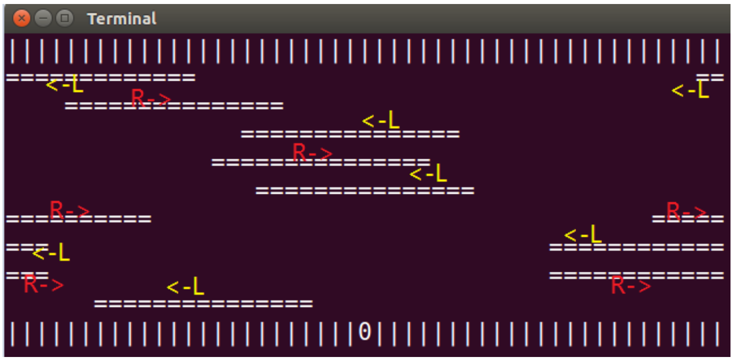
- When the game starts, the frog stands in the middle of bottom bank of river.
- The user can control the frog jumps by keyboards:
  - W: UP
  - S: Down
  - A: Left
  - D: Right
  - Q: Quit the game
- The logs will move from left to right or right to left staggerly.



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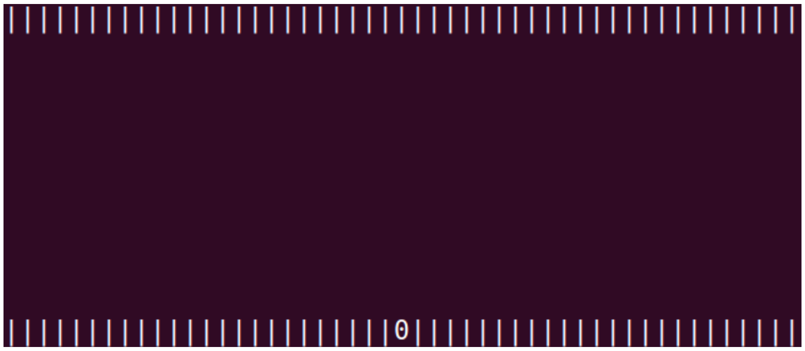
- You will win if the frog jumps to the other bank of river successfully.
- You will lose if the frog lands in the river, or the log reaches the left/right side of the river but the frog still on it.

Function Requirements (90 points):

- To run the template, you will see the frog stands in the middle at bottom bank of river. There are 9 blank rows which means the river. Compile the program to see the static output. (5 points)



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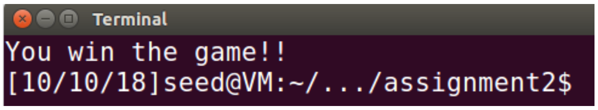
- You should complete the function named "logs_move" to let the logs can move staggerly from left to right or from right to left. (20 points)
- You should create pthread and use mutex lock for logs and frog movement control. (30 points)
- "kbhit" function is provided for keyboard capture. You should complete the jump rules for keyboard actions. And the frog's position should be updated when keyboard hits. (15 points)
- When the logs are moving, the program should be able to judge the game status (win, lost or quit). Print out the message for user whether he/she wins or lost the game. (15 points)
- If the user quits the game, print the message. (5 points)

Demo Output

- Demo output for user wins the game



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You win the game!!
[10/10/18]seed@VM:~/.../assignment2$
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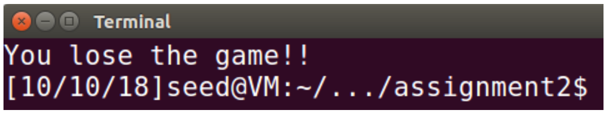
- Demo output for user loses the game:



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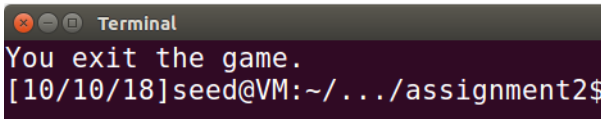
You lose the game!!
[10/10/18]seed@VM:~/.../assignment2$
```

- Demo output for user quits the game:



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You exit the game.
[10/10/18]seed@VM:~/.../assignment2$
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Report (10 points)

Write a report for your assignment, which should include main information as below:

- How did you design your program? Where did you place the mutex lock and why?
- What problems you met in this assignment and what is your solution?
- The steps to execute your program.
- Screenshot of your program output.
- What did you learn from this assignment?

Submission

- Please submit the file as package with directory structure as below:
  - **CSC3150_Assignment_2_(Student ID)**
    - Source
      - hw2.cpp
    - Report
- Due date: End of 30 Oct, 2018

Grading rules

Completion	Marks
Bonus	0 ~ 10 points
Report	10 points
Completed with good quality	80 ~ 90
Completed accurately	80 +
Fully Submitted (compile successfully)	60 +
Partial submitted	0 ~ 60
No submission	0
Late submission	Not allowed