A Diagonally Moving Ping Pong Ball

Homework Assignment #6

ELEC462-003 System Programming

(Instructor: Prof. Suh, Young-Kyoon)

Due: 01:59:59 pm, Thursday, April 27, 2023

Your task is to modify `bounce1d.c` for a ping pong ball to move *diagonally*, being bounded within a rectangle.

<Precautions!!>

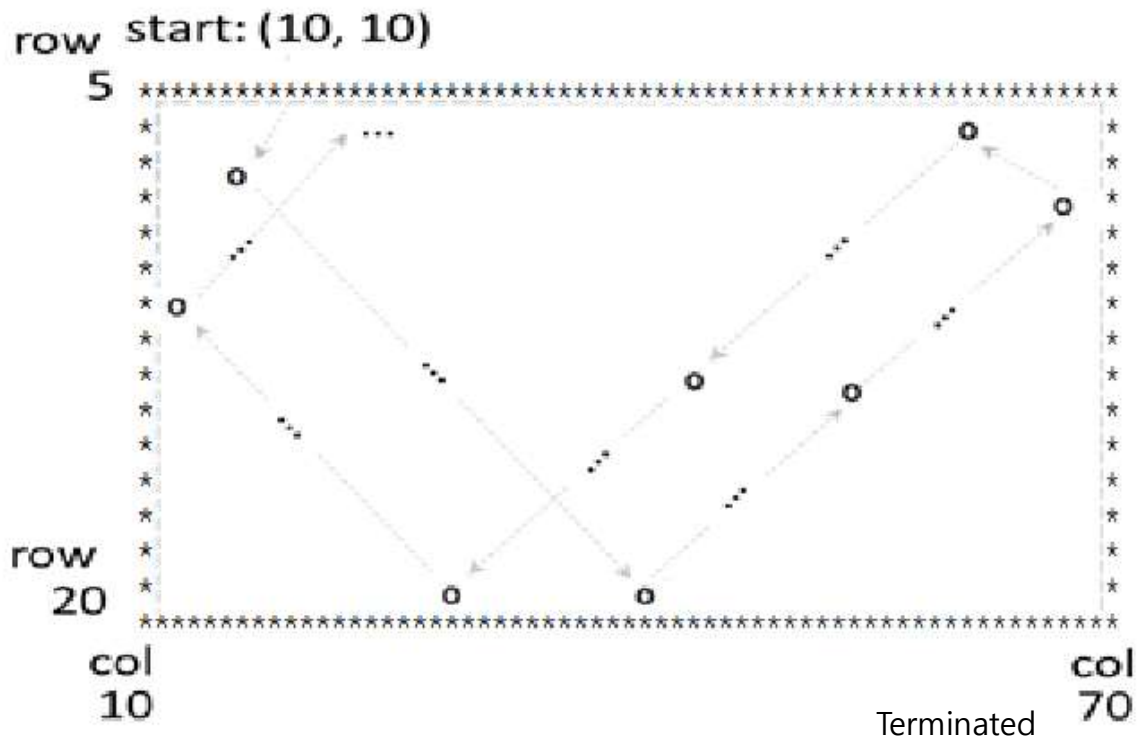
- Name your source code like: `hw6_s`<StudentID>`.c`.
- Zip the code and name it like `hw6_s`<*StudentID*>`.zip`.
  Ex) If your student ID is 2022123456, your file name would be `hw6_s2022123456.zip`.
- Upload your zip file into LMS assignments tab.

<Requirements>

- Modify your code to accept arguments.
- [usage] `./hw6` *symbol ball_start_col ball_start_row top_row bot_row l_edge r_edge*
  - *symbol*: ball symbol with a one character (ex. 'x')
  - *ball_start_col*: starting column
  - *ball_start_row*: starting row
  - *top_row*: top row where the ball can move uppermost
  - *bot_row*: bottom row where the ball can move lowermost
  - *l_edge*: left edge where the ball can move to the leftmost
  - *r_edge*: right edge where the ball can move to the leftmost
- Some keys can make the ball faster or slower.
  - key '`q`': slow down x coordinate of the ball (ex. 2x slower in x axis)
  - key '`w`': slow down y coordinate of the ball (ex. 2x slower in y axis)
  - key '`e`': speed up x coordinate of the ball (ex. 2x faster in x axis)
  - key '`r`': speed up y coordinate of the ball (ex. 2x faster in y axis)
- The speed of the ball should be in **half** when it touches the top or bottom, and the speed should be **doubled** when it touches the left edge or right edge.
- The boundaries of the top, bottom, left, and right sides should be marked with *.
- Key '`Q`' will quit the program.
- Ignore CTRL-\, but accept CTRL-C to terminate the program. For all the other signals, their respective default action is applied.
- A reasonable moving speed is acceptable, but the moving direction of a ball must be ***diagonal***; not allowed for horizontal or vertical motion.
- If a ball reaches the top, the bottom, the left edge, or the right edge, then it should be reversely moving with bounce.
- It is totally free to add a new data structure to the modified code if needed. But leave your README file for helping our grading.
- Assume that no argument is wrong. That is, no need for exception.

[Expected output]

```
yksuh@macan:~/courses/ELEC462/homeworks/hw6$ gcc -o HW6 hw6_s2022123456.c -lcurses
yksuh@macan:~/courses/ELEC462/homeworks/hw6$ ./HW6 o 10 10 5 20 10 70
```



Terminated

```
yksuh@macan:~/courses/ELEC462/homeworks/hw6$ <- After key 'Q' is entered ...
```

Q & A

If you have a question, then contact TA by email (rinyo0126@knu.ac.kr). Or, leave your messages on LMS Q&A board.

Late Day Policy

All exercises are due at 1:59:59 pm on the assigned due date. A grading penalty will be applied to late assignments. Any assignment turned in late will be penalized 50% per late day.

Plagiarism

No plagiarism will be tolerated. Also, NEVER use ChatGPT. If the assignment is to be worked on your own, please respect it. If the instructor determines that there are substantial similarities exceeding the likelihood of such an event, he will call the two (or more) students to explain them and possibly to take an immediate test (or assignment, at the discretion of the instructor) to determine the student's abilities related to the offending work.