

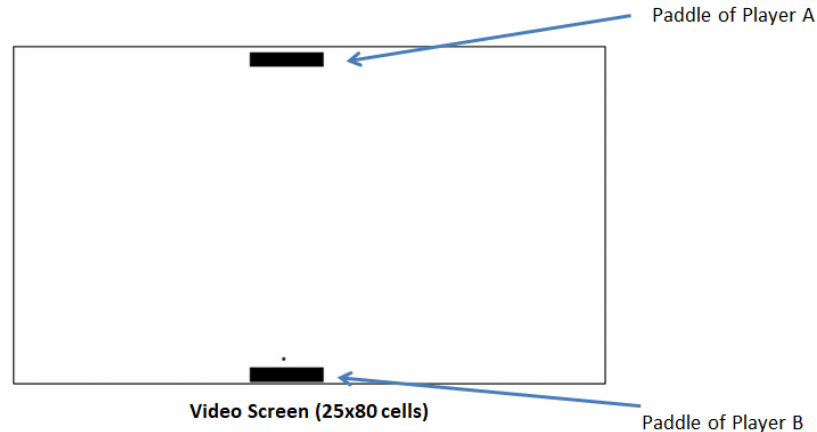
Computer Organization & Assembly Language (BSE-A, BSE-B) Fall 2024

Project

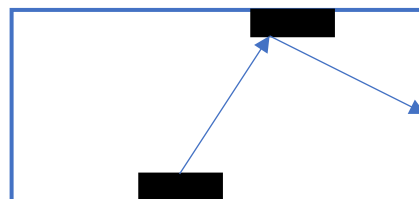
Total Marks:100

Submission: This project can be done individually or in pairs. You have to submit 1 .asm file. Deadline -Friday, 6th December 2024, midnight.

You are required to implement a game “PingPong” in 8088 Assembly Language with following requirements:



1. **[Initial Screen – 10 Marks]** The game will start with screen shown above,
 - a. All the screen will be clear (black background, attribute 0x0720).
 - a. First row of the screen (Row no. 0) contains paddle of Player A in the middle. Paddle is a 20 cells wide white box on black background starting from column 30.
 - a. Last row of the screen (Row no. 24) contains Paddle of Player B with same requirements.
 - a. **Ball's Start Position** will be at Player B's side. A White star “*” on Black background at 2nd last row, col 40.
2. **[Ball Movement – 20 Marks]** After every timer tick, the ball will move by ONLY one cell diagonally following these rules:
 - a. **Ball's Start Direction** will be Upright Diagonal i.e. initially it will move from Paddle of Player B in Upright Diagonal (*jump by one row and one column makes diagonal*).
 - a. After reaching Player A's row (0), it will bounce back in opposite diagonal as shown in Figure 1.
 - a. Every time the ball hits any wall or any paddle, it will bounce back in opposite diagonal within game's boundary.
 - a. So, the ball will keep moving on the track shown in Figure until the game ends.



1. **[Player Turns – 10 Marks]:** After hitting 1st or last row, the turn of opposite player will start. For example, first turn is of Player A when ball is moving from Player B towards Player A. After hitting his row, Player B's turn will start.

1. **[Moving the Paddles – 10 Marks]:** When it is Player A's turn pressing Right/Left Key will slide his Paddle towards right or left by one cell according to the key pressed. Similarly, Player B's Paddle will slide on Right/Left Key if it is his turn.
1. **[Scoring – 5 Marks]:** If a Player cannot stop opponent's ball coming to his wall using his paddle, then score of the opponent will increase. Now the opponent will take turn, the ball will be moved to the starting position of the opponent and game will start again.
1. **[Termination – 5 Marks]:** If score of any player reaches 5, the game will terminate. Other programs should run fine on command prompt after termination of your game.

40 marks - Viva