Computer Organization & Assembly Language (BCS-3D, BCS-3E)
**Fall 2025**
Project
Total Marks:100
Submission: This project can be done individually or in pairs. If you are doing in pairs, you have to implement extra functionality as given below. You have to submit 1 .asm file. Deadline -Friday, 5th December 2024, midnight.

Q4 [30 Marks]: You are required to implement a game "MovingStar" in 8088 Assembly Language with the following requirements:

Screen 25*80
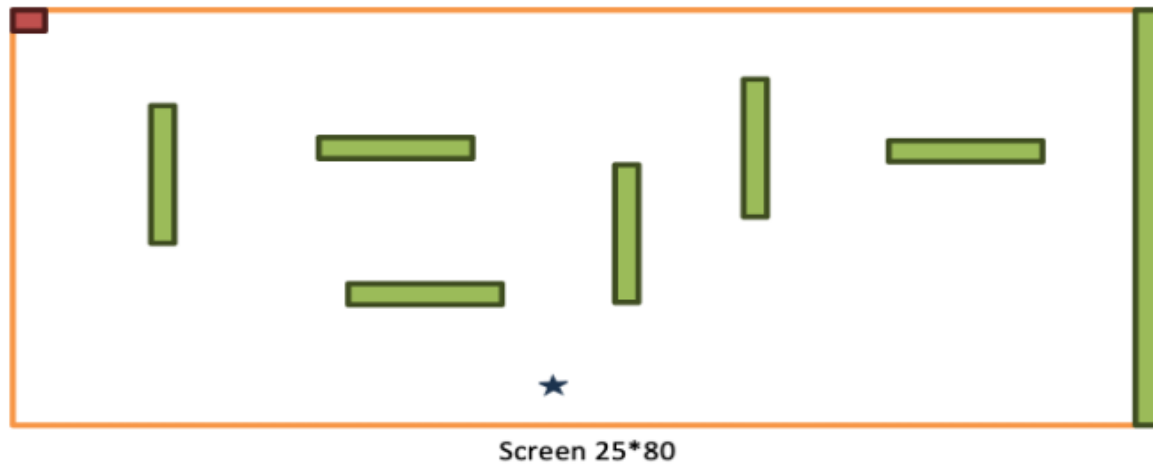
[Initial Screen – 5+10+5+5 Marks] You have to do the following to initialize the screen.
- Clear the screen.
- Place the obstacles using *"place_obstacles"* subroutine. It will initialize all the Green (0x2220) obstacles on the screen as shown in the picture. The full right boundary is also a green obstacle.
- Place the goal at the top left corner of the screen. The goal is a space with a red background (0x4420).
- Place the player, a blue color asterisk character (* = '0x2A') at the center of the last row.

[Game Mechanics– 10+10+5+5 Marks]
- After every 2 timer interrupts, the player moves one step in the direction of the last pressed arrow key. Initial Direction will be Rightward.
- Use the keyboard arrow keys to move the player in a specific direction.
- If the player collides with an obstacle or the right-most column, the game ends with "Game Lost" message.
- If the player reaches the goal, the without touching any obstacle, the game ends with "Game Win" message.

[Safe Termination – 10 Marks]: After the end of the game, other programs should run smoothly on DOS Box.

[Extra Functionality to implement if project is done in pairs – 25 Marks]:

You need to implement minimum 3 levels of this game.

The 2nd level will have obstacles in triangular shape and the 3rd level will have obstacles in random shapes and will have a timer of 10 seconds i.e., the player has to reach the goal in 10 seconds else the game is lost.

Show proper screens for displaying levels in the game. If the player wins the first level, the player will be moved to the 2nd level and so on.

[Viva – 10 Marks]: