Weekly Supervisor Meeting

Complete and submit via the relevant link on Learning Zone

1. Project Title: AI Pathfinding Showcase

2. Supervisor: Aboozar Taherkhani

3. Objectives for Period (max 100 words):

* Implement end-to-end A\* pathfinding and toggle between BFS/A\*.
* Wire up “Soft Reset” so walls persist but wave colours and labels clear.
* Surface heuristic (f-score) and g-score on each tile during A\*.
* Fix null reference in Tile.ClearLabel() by properly assigning the Text component in the prefab.
* Polish UI: ensure all buttons (Toggle Mode, Run Search, Soft Reset) invoke the correct methods.

4. Summary of Progress for Period (max 200 words):

* ***A Integration & Mode Toggle:*** \* Added an on-screen “Mode: BFS/A\*” label and hooked the Toggle button to switch algorithms. Verified Run Search now dispatches to RunAStar\_Visual() when in A\* mode.
* **Soft Reset:** “Soft Reset” button now clears all wave colours and labels (Tile.ClearWave()) without touching obstacle/state flags.
* **Heuristic Labels:** During A\* execution, each node’s f-score (and for closed nodes the g-score) is painted on top of the tile via a centred UI Text, and colour-coded (yellow=open, cyan=closed).
* **NullReference Fix:** The \_label field in the Tile prefab was unassigned. Added a tiny world-space Canvas + Text child to the Tile prefab and dragged it into the Tile.\_label slot so calls to SetLabel()/ClearLabel() now succeed.
* **UI Hookup & Testing:** Verified all five buttons (Select Start, Select End, Reset Grid, Soft Reset, Run Search) plus the Mode toggle are correctly wired in the Inspector and fire the expected methods (confirmed via debug logs).

5. Problem Areas and Suggested Solutions (max 100 words):

* **Label Positioning:** The world-space Canvas on each tile needs its RectTransform set to ~1×1 and Text anchored/centred; otherwise, labels drift off. → Propose to standardise the prefab, test on multiple screen sizes.
* **Performance Spike:** As the grid grows beyond 20×20, the per-node coroutine delays and frequent label updates introduce stutter. → Consider batching updates or lowering the delay during demos.

6. Objectives, Deliverables & Plan for Next Period (max 100 words):

* **Performance Tuning:** Profile and optimise the visualisation loops; experiment with coarser delays or frame-skipping labels.
* ***Advanced A Visualisation:*\*** Add numbered frontier ordering (e.g. display queue index for open set) and colour-fade based on heuristic.
* **Prepare Viva Demo:** Build a seamless demo script showing BFS vs A\* comparison, soft reset, and heuristic overlays.

7. Comments (if any, max. 200 words):

The supervisor was pleased with the A\* integration and the soft reset feature, especially the ability to compare BFS and A\* runs on the same obstacle layout. Assigning and scaling the per-tile Canvas/Text resolved the label null references; next week, we’ll focus on performance and deeper visual insights.

8. Date of the Meeting: 20-05-2025

9. Date of next Meeting: 28-05-2025