Courier Circuit: The Route Challenge

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### Team Deliverables

## Design Thinking Report

### 1. Empathize

* We explored popular strategy and path-planning games like “Mini Metro,” “Overcooked,” and “Rush Hour.” Key insights:  
  Players enjoy clear goals, progress tracking, and visual feedback.  
  Time-based challenges and leaderboards increase engagement.  
  Hint systems and smooth difficulty curves improve accessibility.

### 2. Define

* Target Audience: Students and casual gamers interested in strategy and optimization.  
    
  Experience Goal: Provide a fast-paced, visually engaging route optimization game that challenges players to make the best decisions under time pressure.  
    
  Core Concept: A courier must deliver packages to every location exactly once and return to base, while minimizing energy usage and time.

### 3. Ideate

* We brainstormed various ideas for the theme, visuals, and terminology.  
    
  Chosen:  
   Theme: Courier Delivery Challenge  
   Visuals: Neon-glow futuristic interface  
   Cost: 'Energy' as the primary scoring metric  
    
  Additional Features:  
  Leaderboard for replay ability  
  A hint system to guide struggling players  
  Achievement badges for performance (e.g., “Speedster”)

### 4. Prototype

* We developed a simplified version with: Three difficulty levels (Easy/Medium/Hard)  
   6–10 delivery nodes  
  Greedy algorithm to estimate the optimal path  
  Canvas-based map with click interaction

### 5. Test

* Playtests with 6 classmates revealed:  
  Visuals were well received  
  Timer and score tracking added tension  
   Players wanted more feedback on optimality  
    
  Iterated improvements:  
  Added hint and “Show Optimal” button  
  Implemented animated feedback on node selection  
  Added achievements and a global leaderboard

## Game Design Document (GDD)

### Game Title

Courier Circuit: The Route Challenge

### Gameplay Summary

* Players must click on delivery locations to form a complete delivery route that visits each station once and returns to the start. The game scores the route based on energy used and time taken.

### Core Mechanics

* Node-Based Map: Locations represented as interactive nodes on a canvas.  
  Route Planning: Click to build a route.  
  Validation: Game checks that the route is complete and calculates total cost.  
  Scoring: Score is based on time, energy, and hint usage.

### Visual and UX Design

* Futuristic neon-glow aesthetic with animated feedback.  
  Responsive layout for desktops and tablets.  
  Canvas used for rendering nodes, paths, and scores dynamically.

### AI & Logic

* Greedy approximation algorithm for optimal path.  
  Achievement detection and badge unlocking.  
  Local storage-based leaderboard tracking best scores.

### Optional Features

* The hint system recommends next closest node.  
  Achievement system (Speedster, Optimizer, etc.) Leaderboard with top scores across difficulties.

### Tech Stack

HTML, CSS, JavaScript (vanilla)  
 Canvas API for graphics  
 Local Storage for data persistence