1. Project Proposal & Team Members Identification

Title

Labyrinth Navigator

Student Names

Name: Eyad Mostafa — ID: 320230028 — Major: AID — Section: 1
Name: Ahmed Abdelkader — ID: 320230035 — Major: AID — Section: 1
Name: Omar Momtaz — ID: 320230071 — Major: AID — Section: 2

Game Description

Labyrinth Navigator is a simple, first-person exploration game set within a highly geometric, dimly lit 3D maze. The player's objective is to locate a hidden **Key Crystal** and then use it to unlock and reach the **Exit Portal** before a 60-second timer runs out. The design is deliberately minimalist to emphasize core graphics techniques (lighting, transformations, and projection) while ensuring high performance on integrated graphics hardware.

Proposed Features (Mapping to Course Requirements)

Course Requirement	**Feature Implementation**	**Graphics Concept Demonstrated**
A. 3D World	Maze constructed from simple THREE.BoxGeometry walls, floor, and ceiling.	Translation, Scaling, Low-Poly Geometric Modeling
B. Camera System	**First-Person Camera** view, rigidly linked to the player's position.	Viewing and Projection Transformations
C. Lighting	**SpotLight** attached to the camera (Flashlight effect) that casts **Dynamic Shadows** throughout the maze. Minimal ambient	Diffuse Lighting, Shadow Mapping, Shading (Gouraud/Phong)

	light is used.	
D. Textures / Materials	1. Tiled **texture map** on maze walls and floor (e.g., concrete). 2. Key/Exit objects use an **emissive/shiny material** for visibility and specular highlights.	Texture Mapping, Specular Highlights, Material Properties
E. User Interaction	1. **Keyboard Movement (WASD)**: Translates the player's position. 2. **Mouse Look**: Rotates the camera/player orientation. 3. **Activation (E Key)**: Interaction to collect the Key or activate the Exit.	User Input Handling, Transformation Updates (Translate/Rotate)
F. Animation	1. Key Crystal uses continuous **Rotational** transformation. 2. Certain wall sections use smooth **Translational** oscillation as moving obstacles.	Real-time Transformations, Interpolation
G. Game Mechanics	**Collect N objects** (Key) and **Reach a Destination** (Exit Portal) within a **Time Limit**. Simple AABB collision detection is used for walls and collection points.	Game State Management (Win/Loss condition, Collision)

Tools/Technologies to be Used

- **Framework: Three.js (WebGL)**
- **Language:** JavaScript (ES6+)
- **Version Control:** GitHub