

# **The Epilogue of Education: A 3D OpenGL Visualization**

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## **Table of Contents**

<b>Objectives.....</b>	<b>2</b>
<b>Introduction.....</b>	<b>2</b>
<b>Application.....</b>	<b>2</b>
<b>Features.....</b>	<b>2</b>
<b>Conclusion.....</b>	<b>14</b>

## 1. Objectives

- To represent the transformation of education over time through 3D scenes.
- To apply OpenGL for modeling classrooms, workspaces, and technological evolution.
- To demonstrate key CG techniques: animation, camera movement, texture mapping, lighting.
- To build a symbolic timeline: from chalkboards to AI-based education.

## 2. Introduction

- “The Epilogue of Education” is a 3D storytelling project created using OpenGL. It presents a journey from the traditional school setup to modern virtual learning environments and smart workspaces.
- Education has transformed significantly — from chalk-and-board teaching to virtual platforms, digital tools, and AI tutors. This project highlights that progression through symbolic visuals and interactive simulations.

## 3. Applications

- Educational Tool: For visualizing historical to futuristic learning environments.
- Awareness Platform: For education reform and digital literacy promotion.
- Computer Graphics Learning: As a practical case study in OpenGL projects.
- Portfolio Asset: Showcasing CG and creative storytelling for career development.
- Interactive Exhibit: Can be extended for museums, expos, or digital installations.

## 4. Features

### Starting Screen:

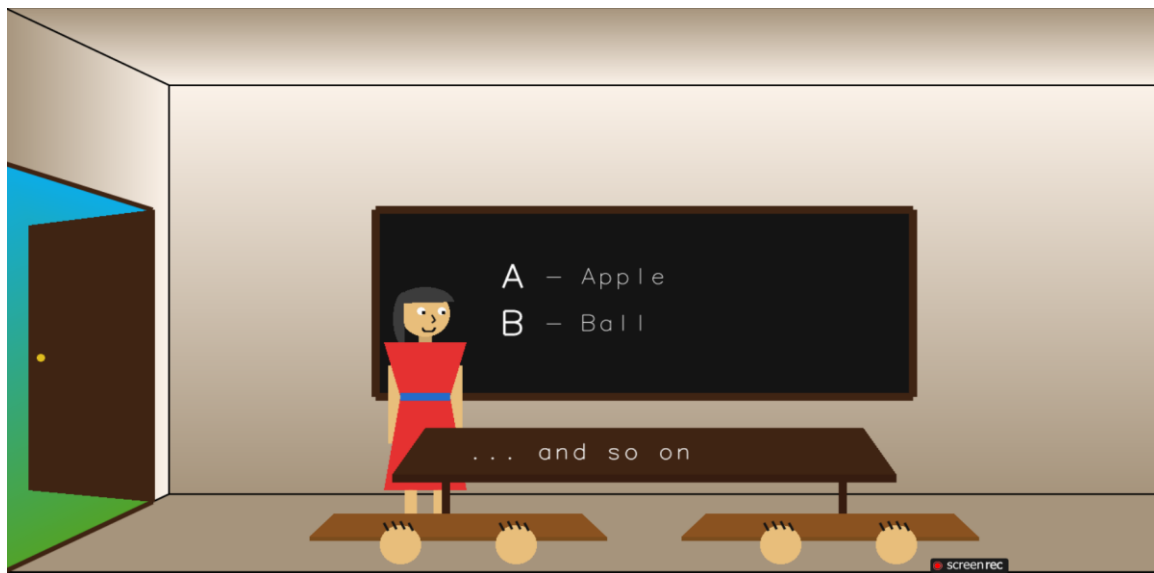


Figure 1: First Scenery

This project presents a simple 2D classroom scene created using basic computer graphics. The room features walls, a floor, and an open door leading to a bright outdoor environment. At the center is a blackboard displaying alphabet content such as "A – Apple" and "B – Ball." A teacher, designed with basic geometric shapes, stands in front of the board, while three students are shown seated from behind. The scene also includes furniture like a table and

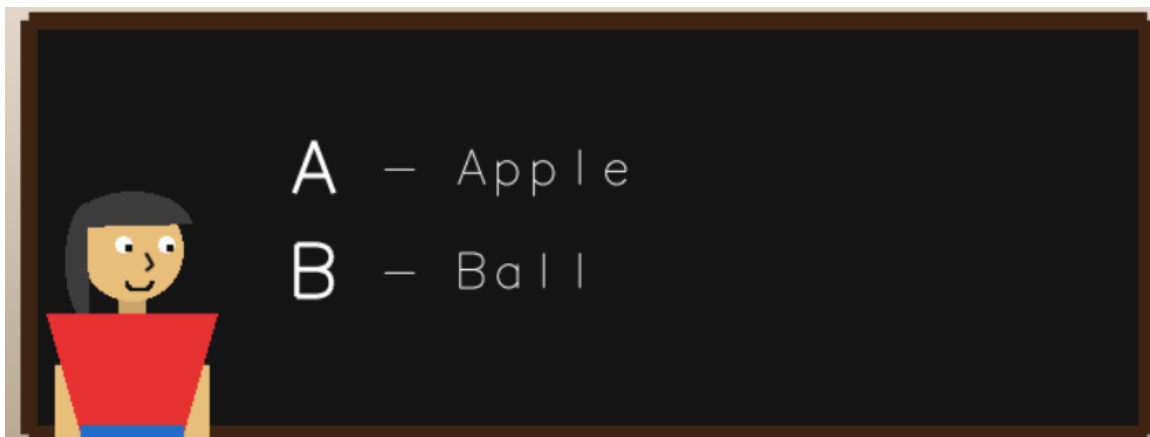
benches, all rendered in warm, flat colors. The use of gradients and simple shapes creates a clean and educational atmosphere. This type of project is commonly implemented using OpenGL or other 2D drawing tools.

#### Teacher Figure:



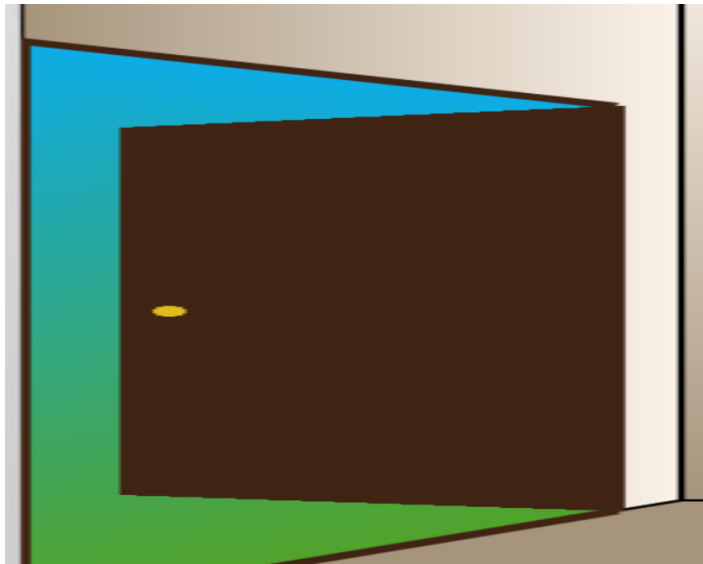
The teacher is illustrated using simple 2D shapes, such as rectangles and circles. She stands in front of the blackboard, facing the students, and wears a red dress with a blue belt. Her face is expressive, with a smile and visible eyes, adding a friendly and engaging appearance. This figure represents the instructor in the classroom and plays a central role in the scene's visual storytelling.

#### Blackboard Content:



The blackboard in the scene displays basic alphabet learning, starting with "A – Apple" and "B – Ball", followed by the phrase "... and so on" to indicate a continuing lesson. This represents an early childhood classroom environment where the teacher introduces students to foundational English vocabulary. The text is written in a clean, readable font to enhance clarity and simulate a real educational setting.

### LEFT DOOR:



This project presents a simple 2D classroom scene created using basic computer graphics. Inside the room, a teacher stands in front of a blackboard teaching the alphabet (A for Apple, B for Ball, and so on). Three students are seated on benches, facing the teacher. A large brown table stands between the teacher and the students. The classroom includes a visible door on the left side, which is open to reveal a bright blue sky and green ground outside, adding depth and a sense of connection between the inside and outside environment.

### 2<sup>ND</sup> Screen-Primary School

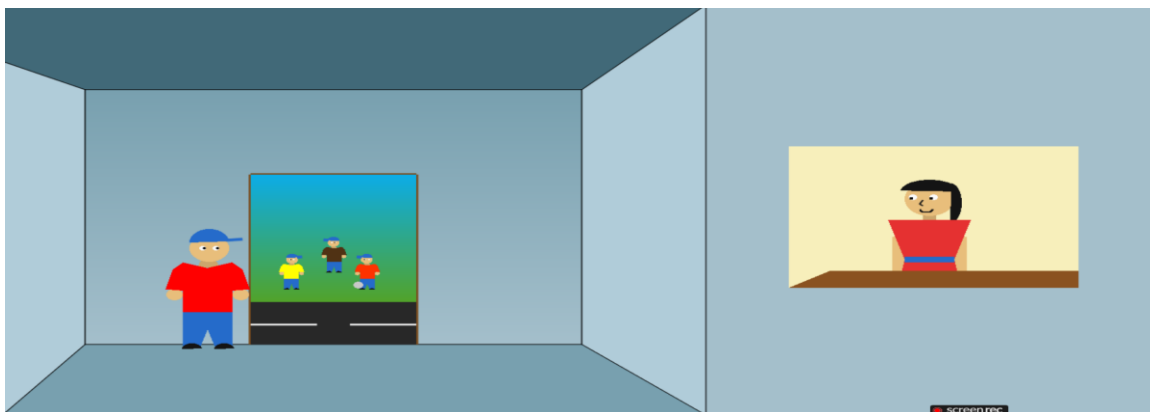


Figure 2: 2<sup>ND</sup> Scenery

This 2D computer graphics scene, titled "The Epilogue of Education," shows a child standing inside a room, looking out through an open door where other children are playing with a ball. The boy, wearing a red shirt and blue cap, clearly wants to join them. However, his mother, seen through a window on the right, reminds him through a dialogue at the bottom of the screen: "No, you have to complete your homework first, until then no playing, no TV." The room is designed with simple shapes and perspective lines, while the outside shows a grassy field and a road. The ball outside symbolizes fun and distraction, while the mother represents

discipline and responsibility. This scene uses basic 2D elements, colors, and storytelling to deliver a moral message — that education and homework come before entertainment

### The Cap-Wearing Boy:



The boy is the main character in this scene. He is wearing a red shirt, blue pants, and a blue cap. He is standing inside the room and looking out the door where other children are playing football. His body language shows he wants to join them, but he is stopped by his mother, who reminds him to complete his homework first. This character represents a typical student who is tempted by play but is guided by parental advice toward responsibility and education.

### The Ball Outside:



The ball is placed outside near the children, who are shown playing. It symbolizes fun, freedom, and outdoor play. Its presence contrasts with the boy inside, who is being told to focus on his homework. The ball visually represents what the boy desires — to go out and play — but he must first fulfill his responsibilities. This object adds meaning to the scene by highlighting the boy's distraction and reinforcing the theme of discipline before leisure.

### The Road:



The road is shown in the background outside the house, behind the children playing with the ball. It is drawn as a straight, grey path with white lane markings, giving a sense of distance and perspective. The road adds depth to the scene and helps create a realistic outdoor environment. It also symbolizes the world beyond — freedom, movement, and possibilities — which contrasts with the child's current responsibility of staying indoors to study.

### 3<sup>rd</sup> Screen-High School

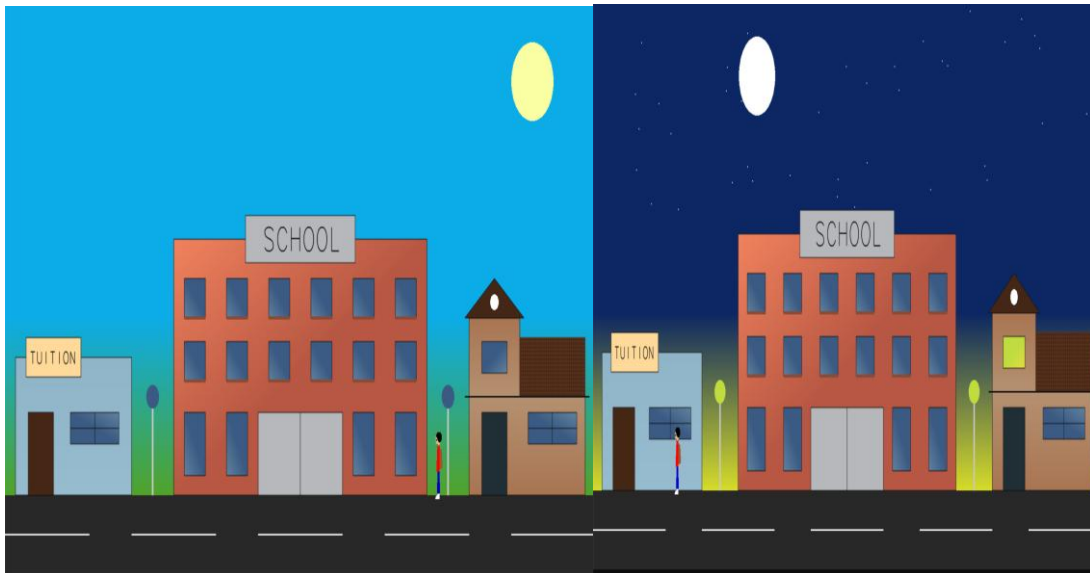


Figure : Daytime Mode

Figure:Nighttime Mode

Figure 3:3<sup>rd</sup> Scenery

This 2D scene shows a student's daily environment with a school, tuition center, and home along a road.

Daytime Mode: A bright blue sky represents an active school day. It shows the beginning of the student's routine — going to school and tuition.

Nighttime Mode: A dark sky with stars and a full moon creates a calm scene. It reflects the end of the day, when students return home, rest, or continue studying.

The change in lighting helps show the full cycle of a student's educational life — from morning to night.

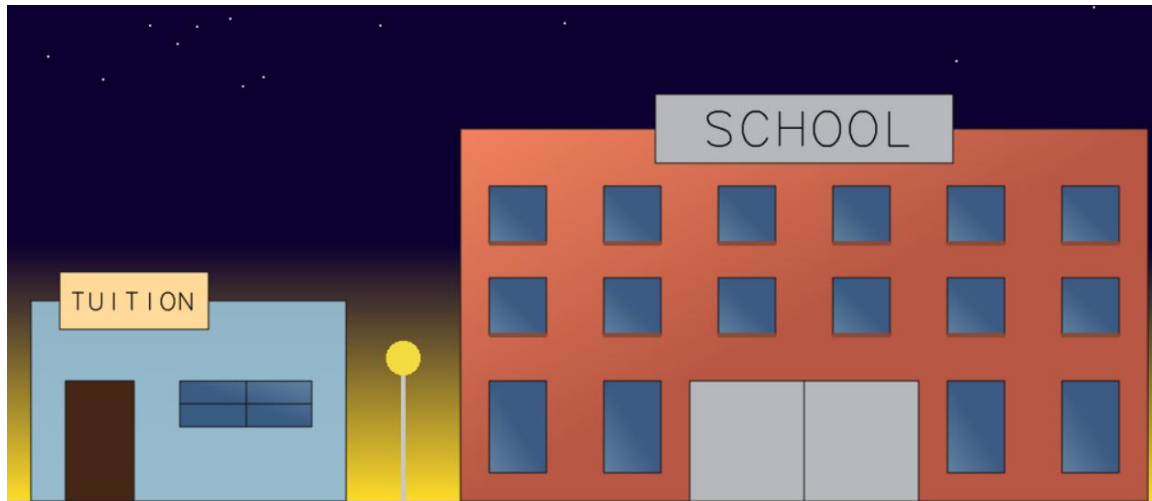
### The Moon:



The moon appears in the upper-right portion of the sky, indicating that the scene is set during the night. It is drawn as a simple white circle, surrounded by stars in a dark blue sky. The presence of the moon adds a calm and quiet atmosphere, symbolizing the end of a long day

filled with school, tuition, and learning. It also highlights the dedication of students who study late into the night. Visually, the moon enhances the overall mood of the scene and gives it a realistic time setting.

### School and Tuition Center:



**School:** The school building is placed at the center of the scene and represents the main place for formal education. It is designed with multiple windows and a clear label, showing that it's the core part of a student's learning journey.

**Tuition Center:** Located to the left of the school, the tuition center symbolizes additional academic support outside regular school hours. It reflects how students often continue learning beyond school through private coaching or extra classes. Together, these two buildings highlight the structured and extended nature of a student's daily education routine.

### Roadside Lamp:



The roadside lamp is placed near the road in the scene and changes behavior based on the time of day:

**In Daytime:** The lamp is off, as natural sunlight provides enough brightness.

**At Night:** The lamp is on, glowing to light up the surroundings and ensure visibility and safety. This lamp adds realism to the scene by showing how lighting changes with time, and it also reflects real-life functionality in urban and school environments.

#### 4<sup>th</sup> Screen-Collage

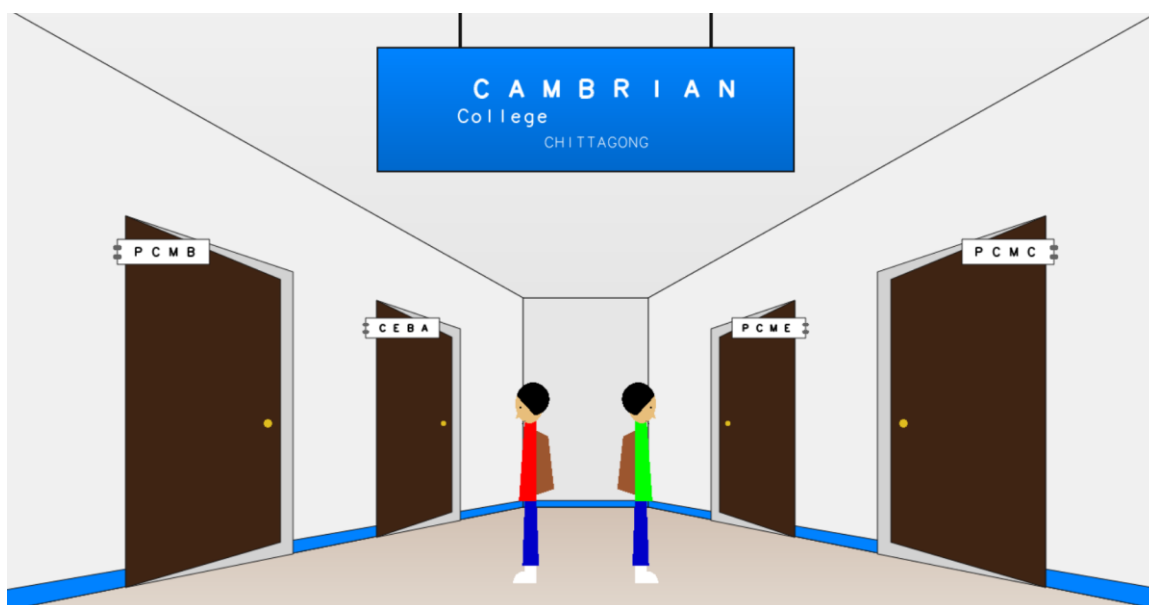


Figure 4:4<sup>th</sup> Scenery

This 2D computer graphics scene shows the inside of Cambrian College, Chittagong, where students are choosing their academic streams. The scene features a hallway with five labeled doors, each representing a different group: PCMB, CEBA, PCME, PCMC, and PCMCB symbolizing various combinations of Science, Commerce, and Arts subjects. Two students stand in the middle, facing the doors, indicating they are about to decide their future academic path. The environment uses perspective drawing to create depth, and the bold blue banner at the top highlights the institution's name. This scene reflects a critical moment in a student's education — the transition from school to college, and the importance of subject choice in shaping careers.

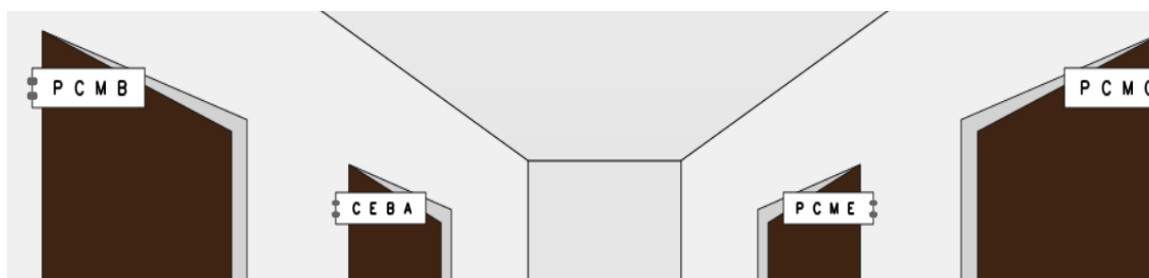
#### Cambrian College Signboard:



The signboard is placed at the top center of the scene and prominently displays the name "CAMBRIAN College, CHITTAGONG". It is designed in bold white text on a blue background, making it easily noticeable and giving the scene an official institutional feel. The sign represents the identity of the college and indicates that the students are at a point of transition — entering higher education. Visually, it anchors the scene and draws attention to the educational setting.



### The Four Academic Groups:

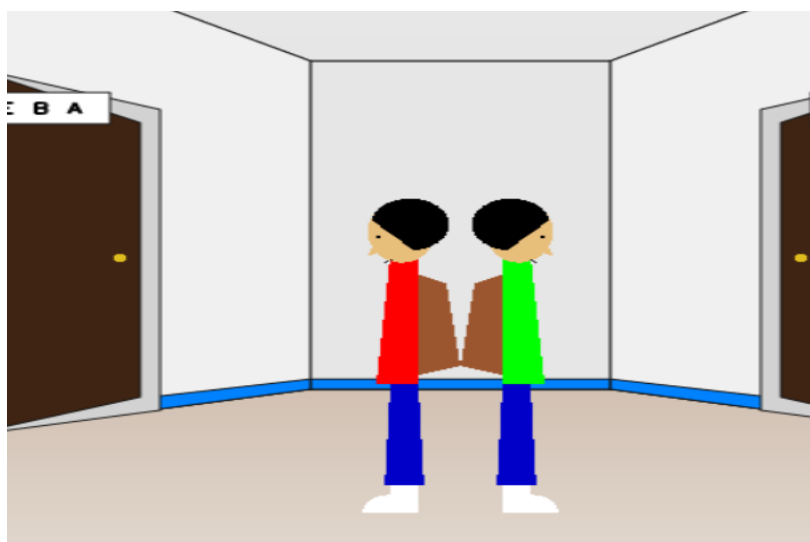


In the scene, there are four main academic groups represented by the labeled doors:

- PCMB – Physics, Chemistry, Mathematics, Biology (Science group for medical/engineering)
- PCME – Physics, Chemistry, Mathematics, English (Science with focus on engineering)
- PCMC – Physics, Chemistry, Mathematics, Computer (Science with computer science)
- CEBA – Civics, Economics, Business, Accounting (Commerce group)

These doors symbolize the major academic streams that students can choose in college. Each group leads to different career paths, and the scene shows students at the point of choosing their future. The placement of these doors highlights the diversity of education options available.

### The Two Students



In the scene, two students are standing in the middle of a college hallway, facing different directions toward the doors labeled with academic groups. Each student is wearing a backpack, symbolizing that they are ready to begin their college journey. Their position reflects a moment of decision, where each must choose a group based on their interests and career goals. This represents a turning point in a student's academic life — selecting a path that shapes their future.

## 5<sup>th</sup> Screen Engineering Inistritute

### University Admission Scene:



Figure 5 :5<sup>th</sup> Scenery

This scene shows two students standing in front of International Islamic University, Chittagong. It represents the moment of university admission, where students step into higher education after completing college. The modern blue building, labeled clearly with the university name, symbolizes a new academic chapter. The students carry bags, ready to begin their journey toward specialized knowledge and future careers. Trees on both sides and a clean campus atmosphere reflect a peaceful, focused learning environment.

### University Graduation Scene:

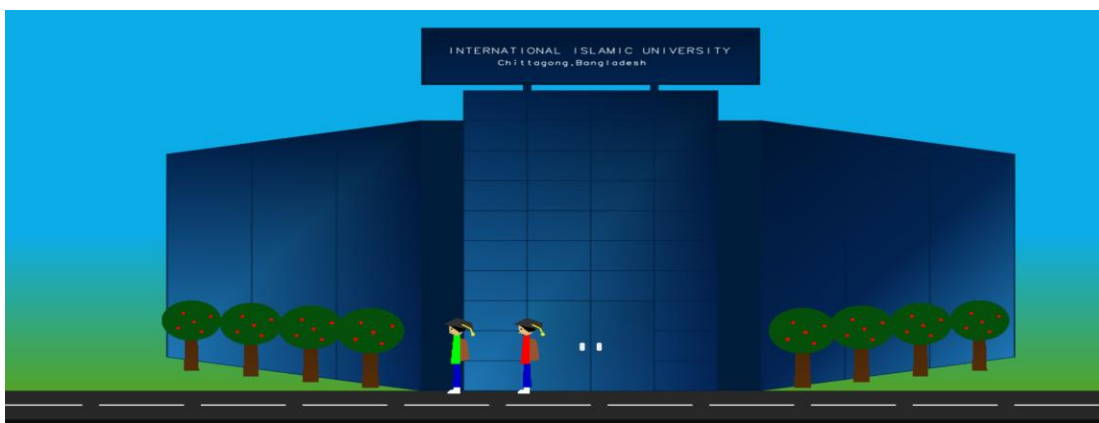
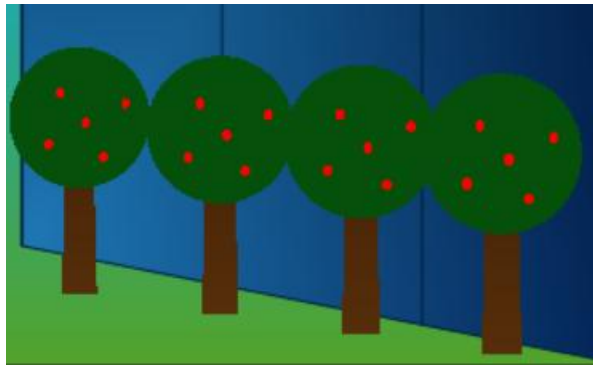


Figure 5 :5<sup>th</sup> Scenery

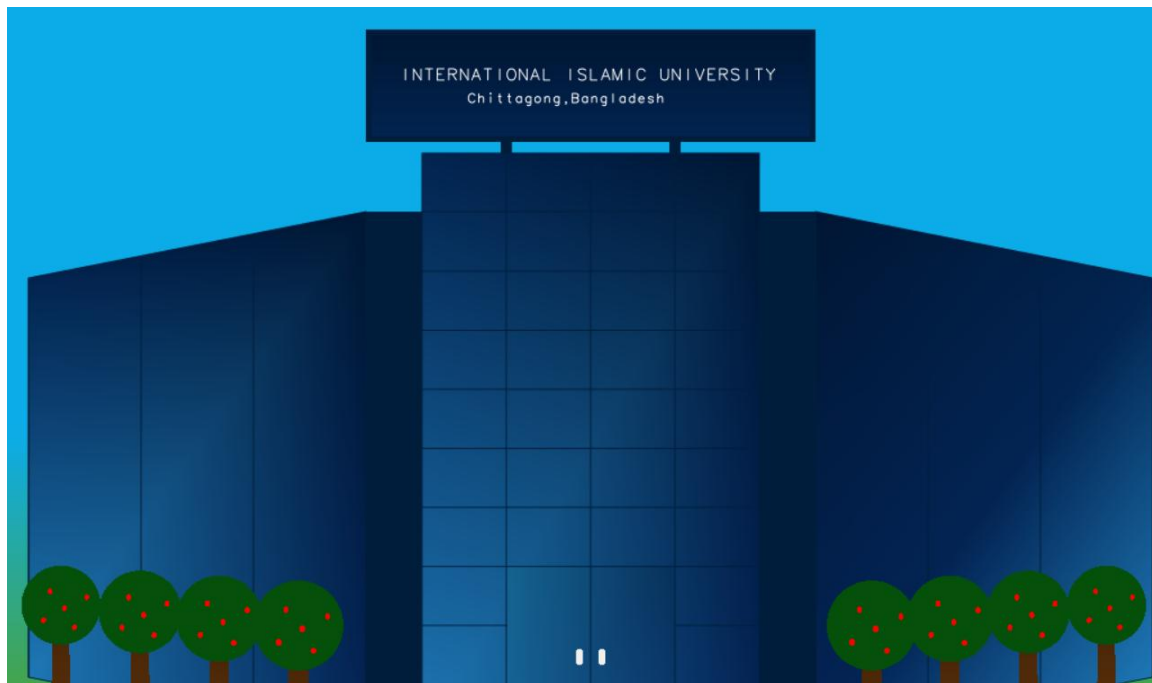
In this follow-up scene, the same two students are shown again — now wearing graduation caps, indicating they have completed their university education. They are standing proudly in front of the same university building, symbolizing success after years of study and dedication. The background remains the same, but their outfits and posture reflect accomplishment. This scene marks the end of formal education and the beginning of a new phase — stepping into the real world, prepared and confident.

### Trees:



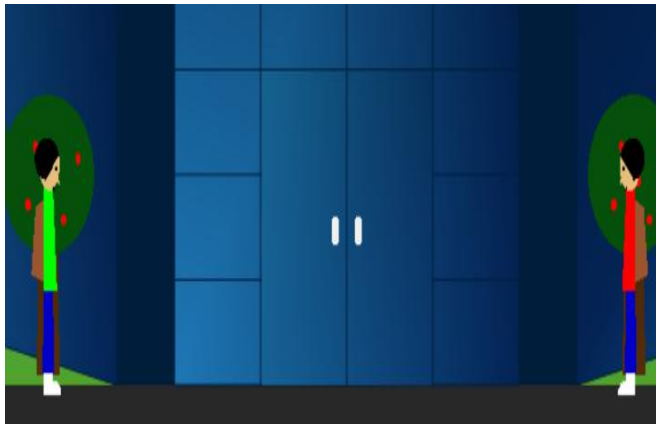
The trees are placed on both sides of the university building in a neat row, adding natural beauty and balance to the scene. Each tree is made using simple geometric shapes: a brown rectangle for the trunk and a green circle with red dots representing leaves and fruits or flowers. These trees symbolize growth, peace, and a healthy academic environment. Their presence enhances the visual appeal and suggests that the university campus is green, student-friendly, and well-maintained.

### University Building:



The university building is the central and most prominent structure in the scene. It is labeled “INTERNATIONAL ISLAMIC UNIVERSITY – Chittagong, Bangladesh”, clearly identifying the institution. The building is designed in a modern style using dark blue shades and rectangular panels to represent glass, giving it a clean and professional look. Its large size and symmetrical shape symbolize the importance and prestige of higher education. Positioned at the center, it reflects the final destination in the academic journey, where students gain specialized knowledge and prepare for their future careers.

### New Student and Graduate Student:



New Student: The student entering the university is shown wearing casual clothes with a backpack, symbolizing the beginning of a new academic journey. This character represents hope, ambition, and readiness to learn.

Graduate Student: The student leaving the university is shown wearing a graduation cap, indicating successful completion of their degree. This character symbolizes achievement, growth, and the transition from student life to professional life.

Together, these two students reflect the full cycle of higher education — from admission to graduation — and highlight the progress one makes through dedication and learning.

### 6<sup>th</sup> Screen-Work Place

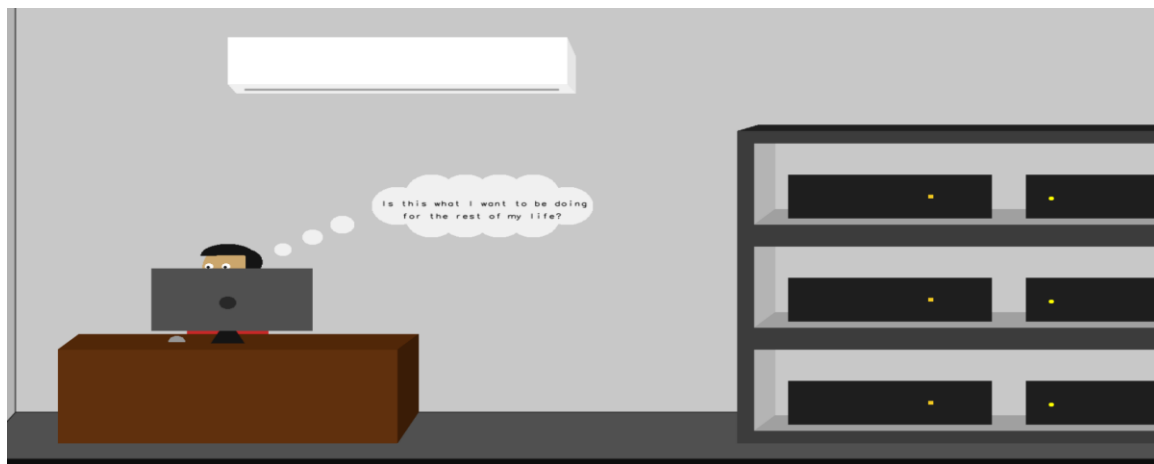
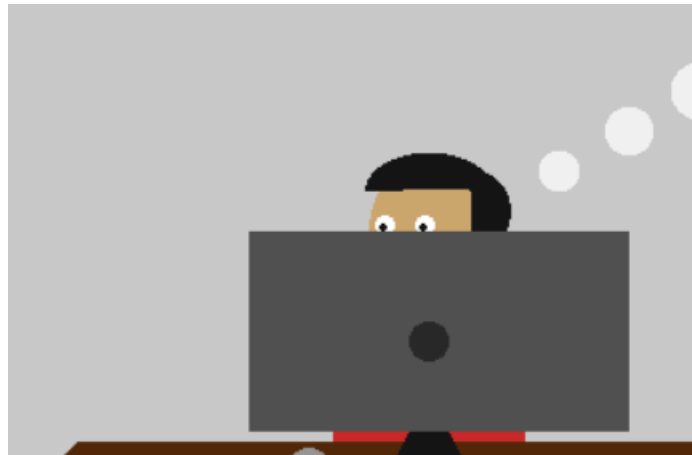


Figure 6 :6<sup>th</sup> Scenery

This 2D scene represents Chapter 6 of the journey — entering the professional world. It shows a person sitting at a desk in a modern office workspace, working on a computer. Behind him, there is a shelf with several CPUs or servers, and an air conditioner on the wall, indicating a typical tech or corporate environment. A thought bubble from the employee says, “Is this what I want to be doing for the rest of my life?” — expressing self-doubt, reflection, or a search for deeper purpose. This scene highlights a common real-life phase where individuals question their career path after reaching their goal, adding emotional depth to the overall story of education and ambition.

### Person (Employee):



The person represents a graduate who has entered the professional world after completing their education. He is sitting at a desk, working on a computer — symbolizing a typical 9-to-5 office job. His eyes and body language show boredom or confusion, reflecting a common real-life moment where someone questions their career path. The thought bubble saying “Is this what I want to be doing for the rest of my life?” suggests inner conflict, highlighting that success in career may not always bring satisfaction. This character adds emotional depth and realism, showing that education leads to a job — but not always to happiness or fulfillment.

### Laptop/Computer:



The large screen on the desk represents a computer or laptop that the person is working on. It symbolizes the digital and desk-bound nature of modern jobs, especially in corporate or IT fields. The screen hides part of the person’s face, reflecting how people often become immersed or lost in work. This object highlights the routine work life after graduation — a shift from learning to earning.

### Air Conditioner (AC)



The white box at the top of the wall is an air conditioner, indicating a corporate or office environment. It represents comfort and modern facilities in a professional workspace. Symbolically, the AC reflects how external comfort doesn't always ensure inner satisfaction — as seen in the employee's thoughts. Despite a climate-controlled room, the person feels mentally uncomfortable and trapped, questioning life choices.

### Machine (Server/CPU)



On the shelf, multiple black machines or CPUs are placed — likely used for data processing, storage, or computing. These machines represent the technical nature of the workplace, possibly an IT office, software firm, or data center. The small yellow and orange lights on each unit show they are powered on and running, indicating an active work environment. These machines symbolize the repetitive and system-driven nature of modern office jobs, supporting the theme of the scene — where the person questions his routine and purpose.

## 8. Conclusion

- Education is not just a path to a job or a specific profession — it is a journey of becoming human, of thinking, and of dreaming. If we can teach love, curiosity, and kindness through education, the next generation will grow into more compassionate, creative, and independent individuals.
- We must allow children to follow their dreams — whether they want to be a dancer, a footballer, a scientist, or even a superhero. Every child is unique, and every dream matters. What they need most is support and encouragement, not restrictions.
- Education is not the end — it is a new beginning, where one sets out to build a life with meaning, purpose, and heart.
- This project was developed using OpenGL, showcasing the journey of education through thoughtful visuals and storytelling.