QUBIT INSTITUTE OF TECHNOLOGY

THE CODING
CURRICULUM

2024

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SCRATCH PROGRAMMING

About the Qubit Coding Program

The Qubit Institute of Technology offers a comprehensive coding program tailored for individuals and schools aiming to educate their students in computer programming. This program is suitable for students from Middle to Senior school levels under the new CBC Curriculum. The curriculum starts with Scratch Programming and advances through Web Development Fundamentals, culminating in more advanced technologies such as software development.

We offer this program every school holiday as well as during weekends for students who are available. Our experienced programmers are dedicated to growing with students from their beginner levels to advanced levels, ensuring a thorough and progressive learning experience.

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Scratch Programming?

Scratch Programming is a visual programming language that enables kids to create interactive stories, games, and animations through an easy-to-use drag-and-drop interface.

Benefits of Learning Scratch

- Help kids develop problem-solving skills
- Scratch is essential for logical thinking
- Scratch improves creativity
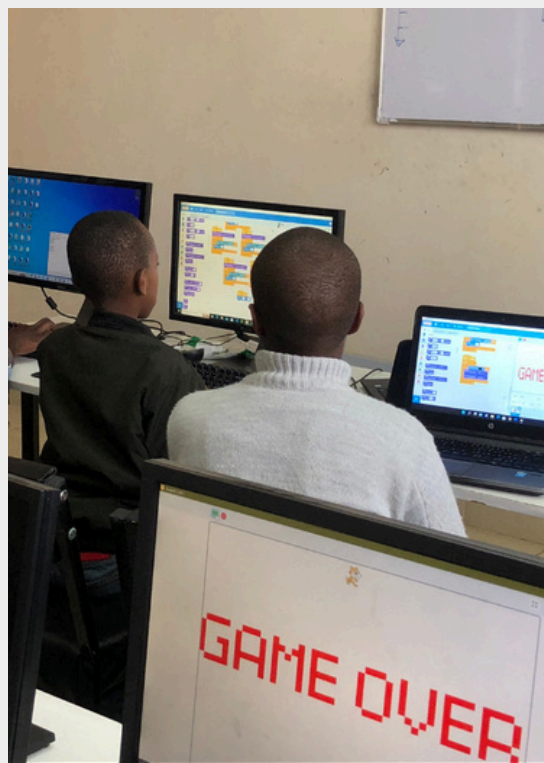
Learning Scratch introduces kids to fundamental programming concepts that provides a strong foundation for a career in IT, Computer Science or Software Engineering among other courses.

Course Information

Requirements:
- A Working Laptop or Desktop
- A reliable internet connection

Schedule:
- April Holiday (2 Weeks)
- August Holiday (2 Weeks)
- December Holiday (30 Days)

Duration:
- 15 Sessions (Appx. 1 Month)

Mode of Delivery:
Online and In-Person

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THE LEARNING SCHEDULE
(DESIGNED FOR GRADES 3, 4, & 5)

ABSOLUTE BASICS [Session 1 and 2]

- **Introduction to Scratch:** kids will be introduced to Scratch as a block-based visual programming language, emphasizing its simplicity and suitability for young learners.

- **Understanding the Interface:** introducing the Scratch interface, including the stage, sprites, and blocks palette.

- **Exploring the Sprite Library:** kids will be shown how to choose and import different sprites from the Scratch library.

- **Creating and Moving Sprites:** students will be shown how to draw their sprites using the sprite editor and make them move using motion blocks.

BLOCKS AND MOTION [Session 3]

- **Understanding Blocks:** Introducing students to blocks and how they work together to form scripts.

- **Motion and Looks:** Focus on motion blocks (e.g., move, turn, glide) and looks blocks (e.g., switch costume, say, think) to control sprite movements and appearance.

- **Hands-on Practice:** students will create simple animations and stories using the blocks they have learned.

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INTERACTIVE STORYTELLING (Session 4)

- **Backdrops:** the concept of backdrops and how to create custom backdrops to set the scene for storytelling projects.

- **Adding Sound:** students will be shown how to add sounds and music to their projects, enhancing the storytelling experience.

- **Collaborative Project:** students will work in pairs or small groups to create interactive stories using different backdrops and sounds.

SIMPLE GAMES (Session 5 & 6)

- **Events and Triggers:** Introducing the idea of events (e.g., when flag clicked, when sprite clicked) and how they trigger actions.

- **Game Objective:** students will define the objective of their games, such as reaching a goal or avoiding obstacles.

- **Hands-on Game Development:** students will be engaged in creating simple games, such as maze games or catch-the-object games.

- **Score and Lives:** students will be shown how to keep track of the player's score and lives in their games.

- **Game Over and Winning:** implementing other conditions for the game to end, such as displaying a "Game Over" message when lives run out or showing a victory message when the objective is achieved.

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ANIMATION AND EFFECTS (Session 7 & 8)

- **Costumes and Animation:** students will be shown how to create multiple costumes for a sprite and how to animate them using the "next costume" block.

- **Visual Effects:** Introducing special effects like changing the sprite's size, transparency, and color to add visual interest to projects.

- **Creative Animation:** guide students to design their own animated characters and scenes.

INTERACTIVE ART PROJECTS (Session 9)

- **Drawing and Painting:** Showing students how to draw and paint on the stage using the pen and stamp tool.

- **User Interaction:** Training students to create interactive art projects where users can draw or color the sprites and backdrops.

SOUNDS AND MUSIC (Session 10)

- **Sound Effects:** Exploring the different sound effects available in Scratch and how to use them in projects.

- **Music and Beats:** Introducing the concept of musical notes and beats, enabling students to create their own music and rhythm using Scratch.

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ADVANCED FEATURES (Session 11 & 12)

- **Variables:** Explaining the concept of variables, their uses, and how to create and manipulate them in Scratch.

- **Custom Blocks:** Introduce the idea of custom blocks (procedures) to help students create reusable code for their projects.

## FINAL PROJECT (Session 13 & 14)

- **Applying the Knowledge:** Allow students to work on a final project, incorporating various elements learned throughout the course.

- **Project Showcase:** Organize a showcase where students can present their final projects to their peers, parents, or guardians.
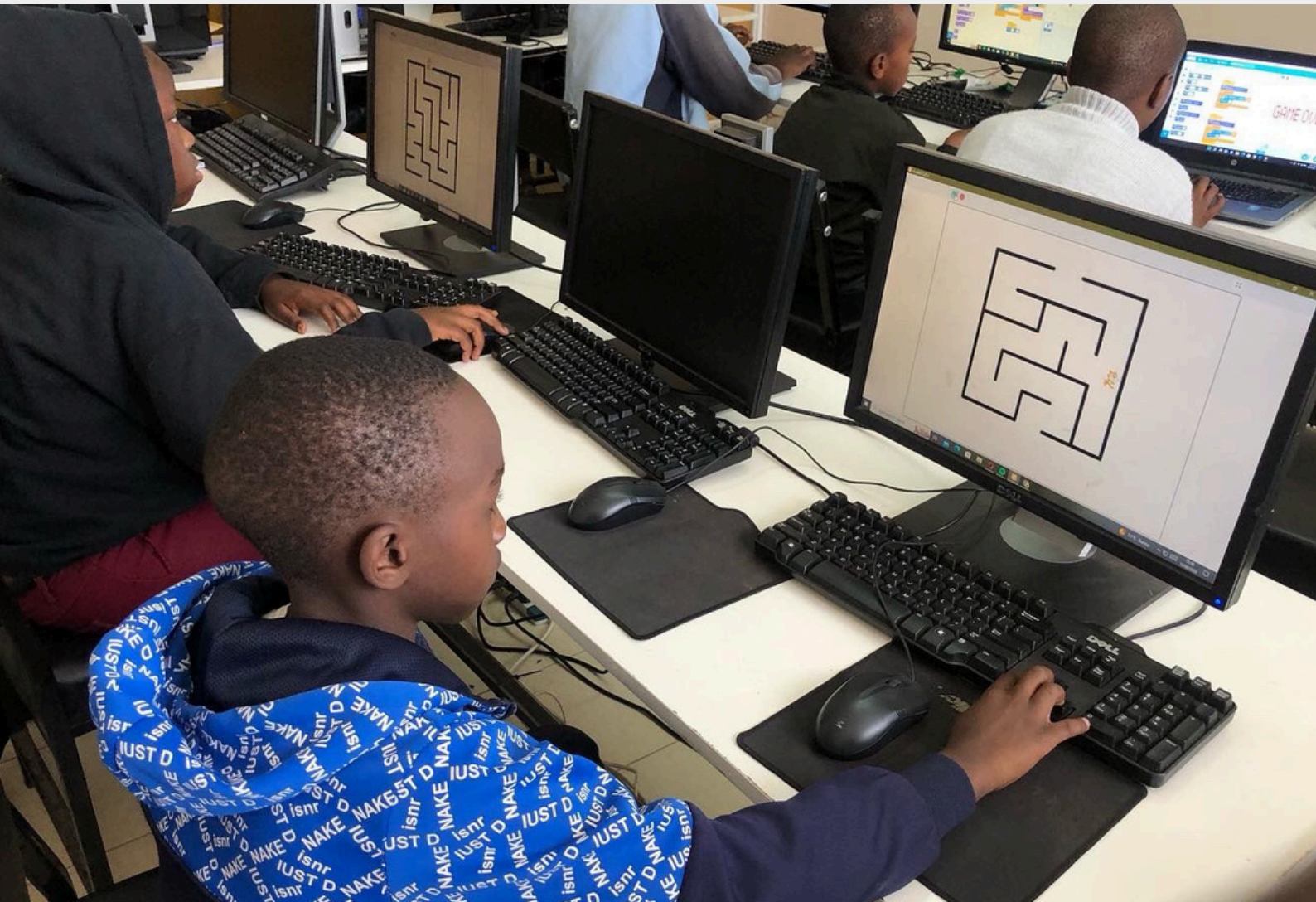

End of Level One

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GALLERY

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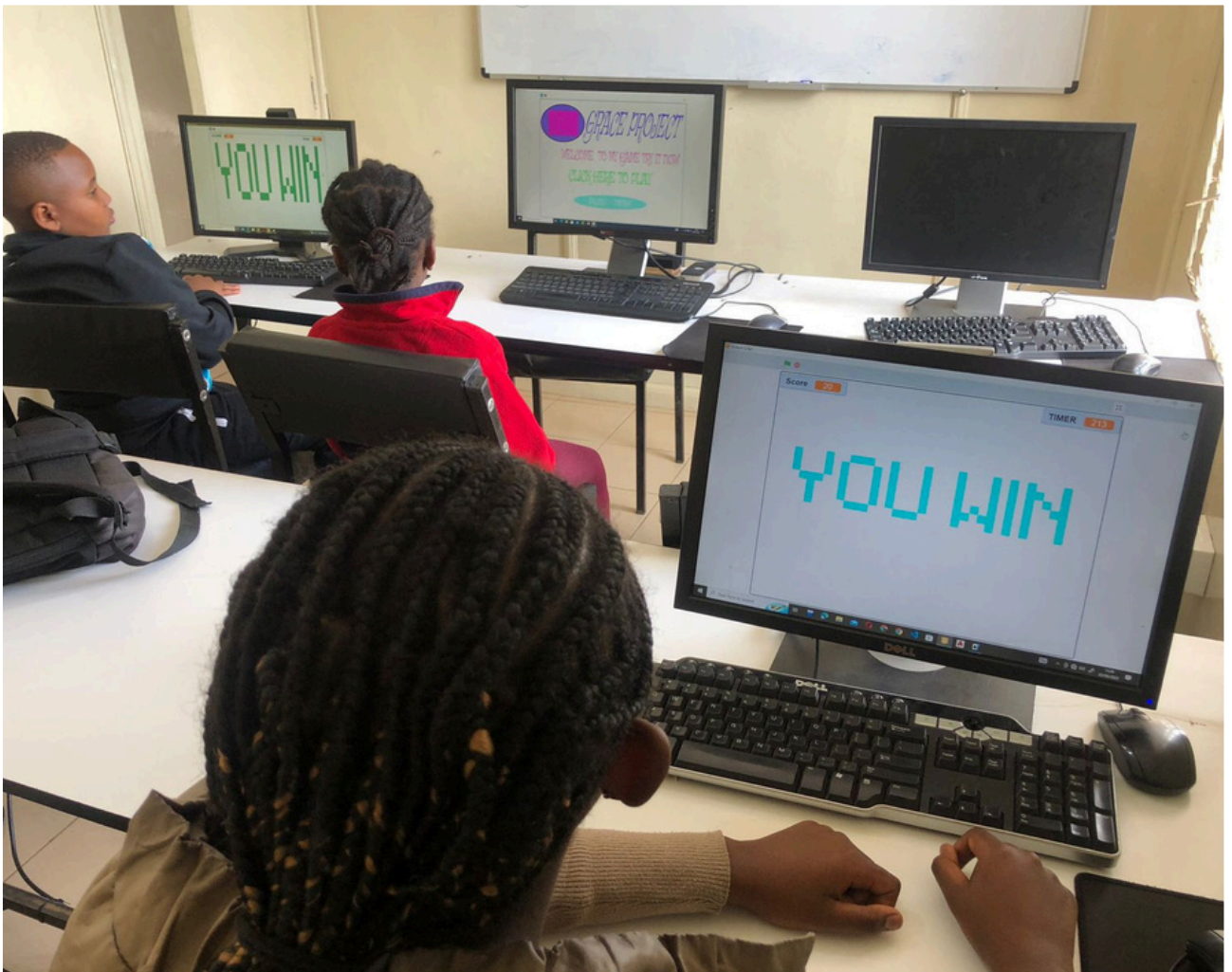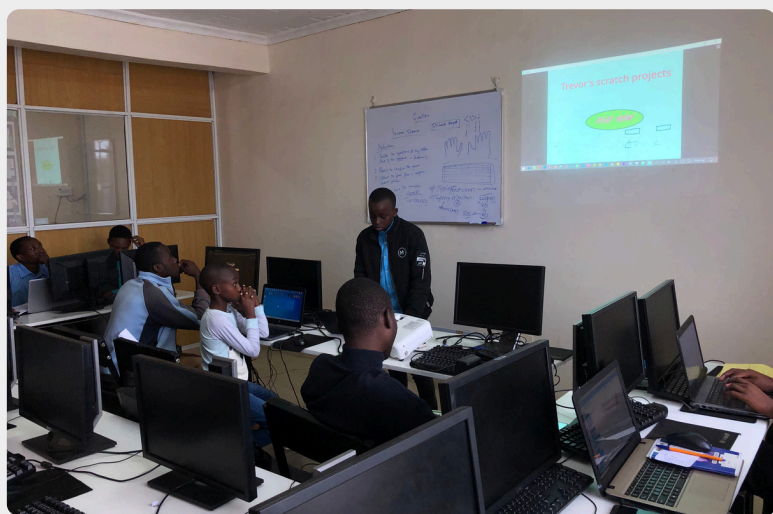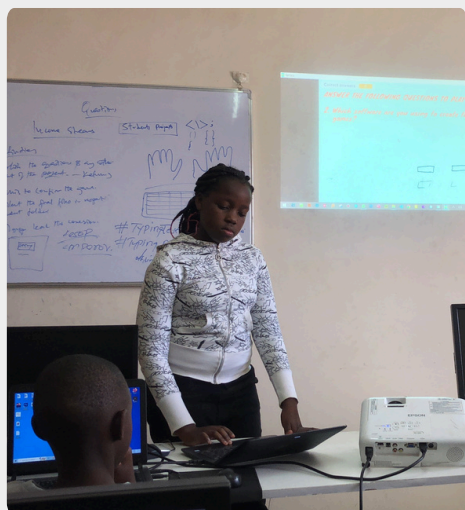
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