

TEACH YOUR KID TO CODE

Vol. 02

CODING

with

COLORS AND SHAPES



Coding Adventures with Colors and Shapes

Welcome to Volume 2 of our coding journey! Get ready to explore the exciting world where colors, shapes, and patterns combine with code to create amazing projects. This adventure will help young coders develop fundamental programming concepts through fun, interactive activities.

Why Colors and Shapes in Coding?

Colors and shapes aren't just for art — they're powerful tools in the coding world that help computers:

- Tell different objects apart
- Create engaging animations
- Make decisions (like "if green, go forward")
- Build patterns and complex designs

By combining colors and shapes with code, we make programming logic more visual, accessible, and FUN for young learners!

Tools We'll Use in Our Coding Journey



Scratch Jr

A free coding app designed specifically for young children ages 5-7. It uses colorful programming blocks to create interactive stories and simple games.

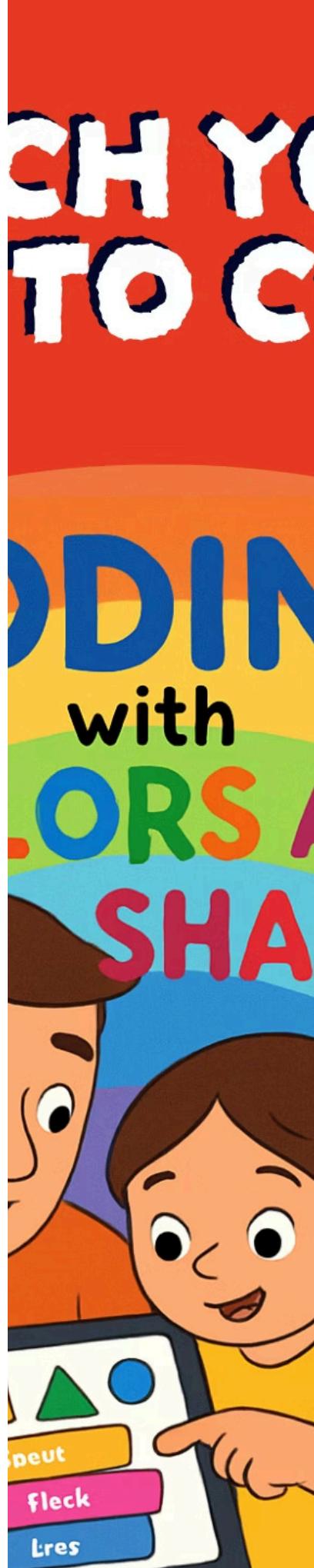
Perfect for beginners with its intuitive interface and visual programming approach.



Blockly

A visual coding platform with colorful blocks that snap together like puzzle pieces to create programs.

Excellent for learning programming logic, patterns, and computational thinking without typing code.



Colors in the Coding World

Colors play an essential role in programming by helping us:

- Design engaging games and digital art
- Create visual signals (like red = stop, green = go)
- Track and categorize information (like scores in different colors)
- Express emotions and set moods in games and stories

Challenge: Think about your favorite color. What could it represent in a game you create? How might it make players feel?



Playing with Shapes in Code



Characters

Use circles for heads, rectangles for bodies, and triangles for hats to build fun game characters!



Backgrounds

Combine squares and rectangles to create buildings, landscapes, and exciting game worlds.



Interactive Elements

Design buttons, collectibles, and obstacles using different shapes to make your games interactive.

Challenge: Look around your room right now. How many different shapes can you find? Try to spot at least 5!

What is a Pattern?



A pattern is something that repeats again and again in a predictable way.

For example: = blue, red, blue, red

Patterns are important in coding because they help us:

- Create interesting designs efficiently
- Program loops that repeat actions
- Organize information in a structured way
- Make games more engaging and visually appealing

Find Patterns Around You



Wallpaper Designs

Notice how shapes and colors repeat to create beautiful designs on walls.

Clothing

Look at stripes, polka dots, and other repeating elements in what you wear.

Floors & Tiles

Floor tiles often use patterns that repeat across the entire surface.

Challenge: Draw your own color pattern with at least 3 colors repeating in a specific order. How many times can you repeat it?

Project 1:

Let's Create Color Patterns!



Using Scratch Jr to Make Patterns

Let's build our first coding project with patterns:

1. Open Scratch Jr on your tablet or computer
2. Choose two different colored characters or objects
3. Use programming blocks to place them in a repeating pattern
4. Try adding motion to make your pattern move across the screen
5. For extra fun, add music that follows your pattern's rhythm!

Challenge: Can you create a more complex pattern using 3 different colors or shapes?

Project 2:



Scratch Jr – Shape Dance

Pick Your Shapes

Select different shapes from the character library or draw your own. Try circles, squares, triangles, and stars.

Add Vibrant Colors

Use the paint editor to give each shape its own unique color. Experiment with bright, contrasting colors.

Create Motion

Use the blue motion blocks to make your shapes slide, spin, grow, shrink, or bounce around the screen.

Add Music

Select background music or sound effects that match the rhythm of your shapes' movements.

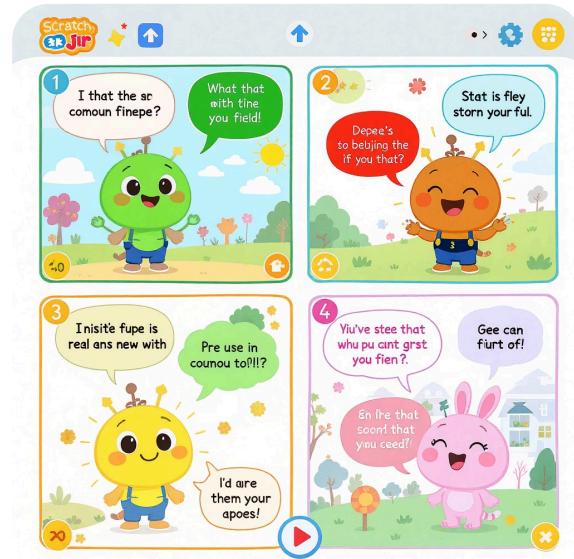
Challenge: Can you make your shapes dance in sync with each other? Try to make them move to a specific beat!

Project 3:

Scratch Jr - Color Story

Let's create a short story where colors help express feelings and events:

1. Choose several different colored backgrounds for different scenes
2. Select characters and change their colors to show emotions:
 - o Blue = sad or calm
 - o Yellow = happy or excited
 - o Red = angry or energetic
 - o Green = jealous or growing
3. Use text bubbles to tell your story
4. Add simple animations to bring your characters to life



Challenge: Can you create a story where a character changes colors as their feelings change throughout the adventure?

Moving Objects with Color Blocks



Blue Blocks

Control motion - make characters move right, left, up, down, or jump. Try combining multiple blue blocks to create complex movements.



Yellow Blocks

Start events - these blocks begin your program, like "When green flag clicked" or "When tapped." Every project needs at least one yellow block.



Red Blocks

Stop actions - use these to pause, stop sounds, or end your program. These are important for controlling when actions finish.



Purple Blocks

Change appearances - make characters bigger, smaller, visible, invisible, or change their colors during the program.

Challenge: Using blue blocks, can you make a shape move in a perfect square pattern across the screen?

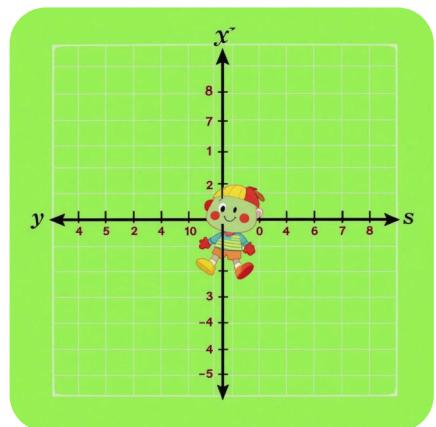
What Are Coordinates?

Coordinates are like a secret map that tells a computer **exactly** where things should be on the screen.

Think of it like a giant grid:

- Left side = smaller numbers
- Right side = bigger numbers
- Top = bigger numbers
- Bottom = smaller numbers

When you want to place a character or shape, you tell the computer its coordinates (like "go to position x:200, y:150").



Challenge: Draw a simple grid on paper (1-10 across and 1-10 up).

Place your favorite toy somewhere and write down its coordinates!

Offline Game: Follow the Color Path



Create Your Path

Cut out colored squares and arrange them in an interesting pattern on the floor.



Assign Actions

Red squares = JUMP
Blue squares = TURN AROUND
Green squares = CLAP HANDS
Yellow squares = SPIN



Play Together

Take turns walking the path and following each color's action. Try creating longer, more complex paths!

This offline activity helps reinforce how colors can represent different commands in coding - just like in a computer program!

Welcome to Blockly!

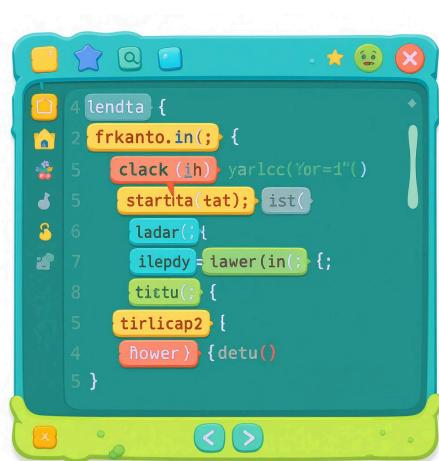
Now we're going to explore Blockly, a more advanced visual coding platform that uses colorful blocks to:

- Create repeating patterns automatically
- Build logical sequences that make decisions
- Draw complex shapes precisely
- Control characters with more detailed commands

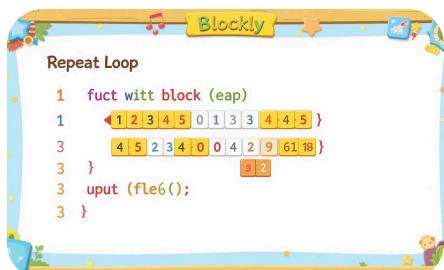
Each Blockly block has a specific color that tells you what it does, and blocks snap together like puzzle pieces to form programs.

Challenge: Try connecting different Blockly blocks together.

What happens if you change their order?



How Blockly Blocks Work



Loop Blocks

"repeat 10 times" tells the computer to do something over and over again, like drawing the same shape multiple times.



Movement Blocks

"move forward 20" or "turn right 90 degrees" controls how characters and objects move on the screen.



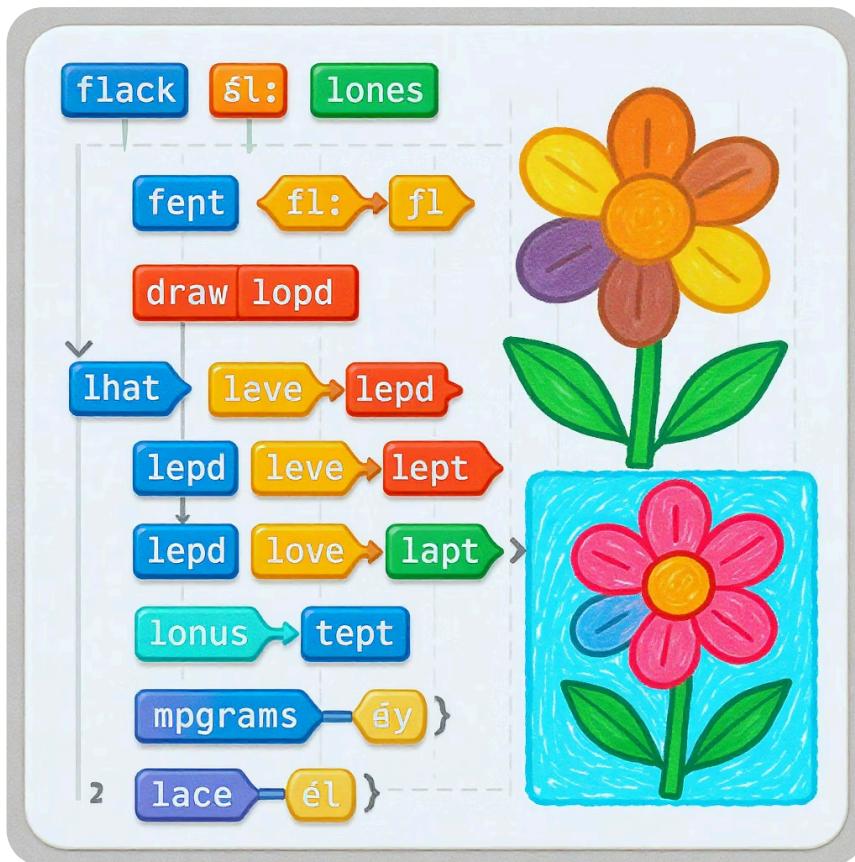
Condition Blocks

"if [condition] then [action]" makes decisions based on colors, positions, or other factors.

Different colors show different types of commands: movement blocks might be blue, loops might be green, and conditions might be yellow. The colors help you quickly identify what each block does!

Project 4:

Blockly – Draw a Flower

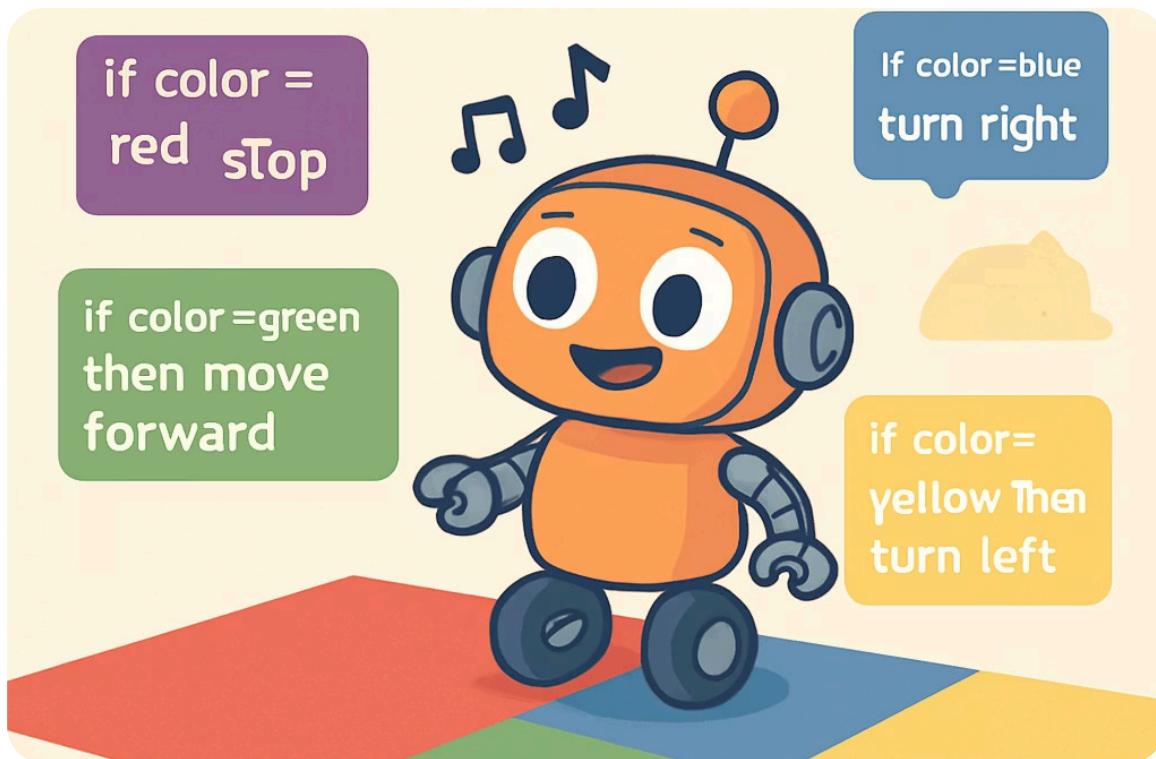


Let's draw a beautiful flower with code!

1. Start with a "when program starts" block
2. Add a "set pen color" block and choose a bright color for the petals
3. Use a "repeat 8 times" loop block
4. Inside the loop, add:
 - o "move forward 50" block
 - o "move backward 50" block
 - o "turn right 45 degrees" block
5. Add blocks to draw a stem and leaves

Challenge: Can you modify your code to draw a star instead? Try changing the angle and number of repeats!

Project 5:



Blockly - Color Robot



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Create a Robot Character

Choose or design a robot character that will move through a colored path. Give it sensors that can detect different colors on the ground.

Program Color Reactions

Use "if-then" blocks to program how your robot reacts to different colors:

- If color = **red**
 - → stop moving
- If color = **green**
 - → move forward
- If color = **blue**
 - → turn right
- If color = **yellow**
 - → turn left

Add Sound Effects

Make your robot play different sounds when it detects each color. For example, a beep for red or a happy tune for green.

Challenge: Can you program your robot to follow a specific color

Project 3: s



My Mini-Game with Color

Let's build a game where players need to press buttons that match the colors shown on screen:

1. Create colored buttons that players can press
2. Program the game to show random colors
3. Award points when players press the matching color
4. Add sound effects for correct and incorrect matches
5. Create a timer and score display

This game teaches matching, quick thinking, and hand-eye coordination while reinforcing color recognition.

Challenge: Can you expand this into a memory game where players need to remember and repeat a sequence of colors?



Project 4:

Blockly – Create a Colorful Maze

Design Your Maze

Create a maze with walls and paths in different colors. Use bright, distinct colors that are easy to identify.

Program Color Conditions

Use "if-then" blocks to create rules like "if path is red → turn left" or "if path is blue → move forward twice."

Add Character Movement

Program your character to move through the maze following your color rules. Test different movement speeds.

Create Challenges

Add loops, traps, and puzzles that require specific color sequences to solve.

Challenge: Make your maze more complex by adding teleporters that activate when your character touches special colored squares!

Project 5:

Blockly - Pattern Art Creator



Create Stunning Pattern Art with Code

Let's build a program that generates beautiful patterns automatically:

1. Choose shapes like stars, circles, or squares as your building blocks
2. Select bright, complementary colors for each shape
3. Use "repeat" blocks to draw your shapes multiple times
4. Add blocks that change size, color, or angle with each repetition
5. Experiment with nested loops to create more complex patterns

This project combines art and mathematics, showing how simple rules can create complex and beautiful designs.

Challenge: Can you create a rainbow spiral by gradually changing colors as your shape moves in a circular pattern?

Reflect & Draw

What was your favorite project or concept you learned in this workbook? Draw it below!

What would you like to build next in Scratch or with code?

Write or Draw your ideas!

Another one, coding beast!



Congratulations! You've completed the "**Teach Your Kid to Code Vol. 02 – Coding with Colors and Shapes**" workbook and unlocked new creative coding superpowers!

You've successfully learned:

- How to use colors and shapes to create fun coding projects
- How to recognize and build patterns with code
- How to design colorful animations and interactive art
- How to use Scratch Jr and Blockly to turn your ideas into reality

Remember, every colorful pattern you create is a step toward becoming a brilliant innovator. Keep exploring, keep experimenting, and most importantly, keep coding! The world is brighter with your creativity in it.

This certifies that: _____ has completed the "Coding with Colors and Shapes" workbook!

Date: _____

Signed: _____

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name _____

MNZT
PARENTHOOD

date _____ / _____ / _____



ABOUT THE AUTHOR



MNZT is a proud father of two girls (ages 10 and 8) and one little boy (1 year old). With over 15 years of experience in software engineering and a solid track record as a startup entrepreneur, he has spent his career turning complex technology into practical, engaging solutions.

A passionate reader and lifelong learner, he has always dreamed of publishing a book —a dream that began when he was a child himself. Today, he has transformed that dream into reality with the creation of the **“Teach Your Kid to Code”** series, a collection of vibrant, beginner-friendly resources designed to spark curiosity and creativity in young minds.

Through his books, he hopes to empower parents and children to explore coding as a fun and accessible adventure, building not just technical skills but confidence and problem-solving abilities for life.

Enjoy the next few volumes and master your programming skills.



Thank You for learning with us!

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