Beginner Tutorial: Programming Drones with the DroneBlocks App

1. WHAT IS DRONEBLOCKS?

DroneBlocks is a visual programming app that lets you control drones using drag-and-drop coding blocks. It is designed for beginners, students, and educators who want to learn coding and drone automation without writing complex code.

You can:

- Make a drone take off and land automatically
- Program flight paths
- Add loops and conditions
- Use sensors and camera functions
- Learn coding logic through real drone missions

DroneBlocks works with several educational drones, especially DJI/Tello drones.

2. 1. WHAT YOU NEED

Hardware

- A compatible drone (ex: DJI Tello)
- Fully charged battery
- Wi-Fi connection to the drone

Software

- The DroneBlocks App
- A tablet, Chromebook, or computer

First Connection

3. STEP 1 — TURN ON THE DRONE

Press the power button on the drone.

4. STEP 2 — CONNECT WI-FI

On your device:

- Open Wi-Fi settings
- Connect to the drone network

Example:
TELLO-XXXX

5. STEP 3 — OPEN DRONEBLOCKS

Launch the app and select your drone.

6. STEP 4 — TEST THE CONNECTION

Press:

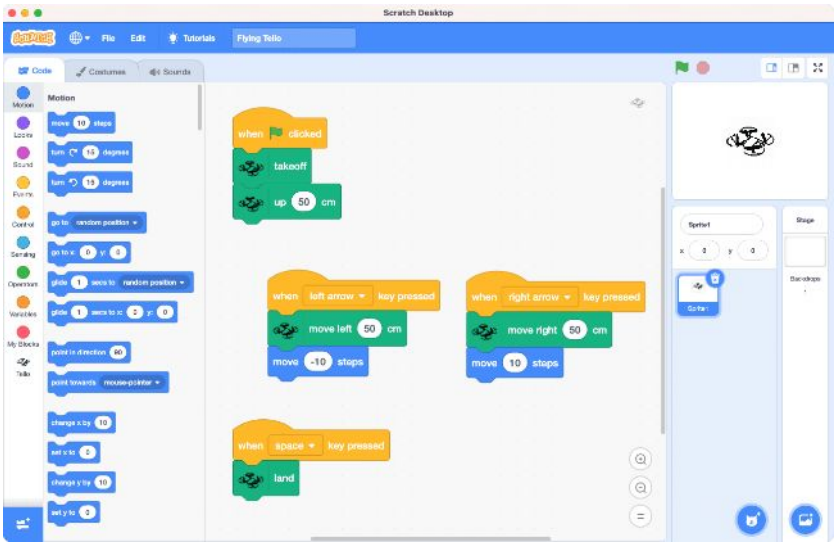
- “Connect”
- Then try a simple command like “Take Off”

Understanding the Programming Blocks

DroneBlocks uses visual blocks similar to Scratch.

Main categories:

- Flight
- Control
- Logic
- Loops
- Variables
- Camera



Example blocks:

- Take Off
- Fly Forward

- Rotate Right
- Land
- Repeat

Your First Program

7. GOAL

Make the drone:

1. Take off
2. Fly forward
3. Land

PROGRAM LOGIC

```
Take Off
Fly Forward 50 cm
Land
```

8. WHAT HAPPENS?

The drone:

- Starts motors
- Climbs into the air
- Moves forward
- Lands safely

Safety Rules

Before every flight:

- ☑ Fly indoors or in open spaces
- ☑ Remove obstacles
- ☑ Keep people away
- ☑ Start with low altitude
- ☑ Keep battery above 30%
- ☑ Always be ready to press emergency stop

6 Beginner DroneBlocks Exercises

9. EXERCISE 1 — SIMPLE TAKEOFF AND LANDING

Mission

Make the drone:

- Take off
- Hover for 3 seconds
- Land

Skills Learned

- Basic commands
- Timing

Suggested Blocks

```
Take Off
Wait 3 seconds
Land
```

10. EXERCISE 2 — FLY IN A SQUARE

Mission

Program the drone to draw a square in the air.

Skills Learned

- Repetition
- Angles
- Distance control

Suggested Logic

Repeat 4 times:

```
Fly Forward 50 cm
Rotate Right 90°
```

Then:

```
Land
```

11. EXERCISE 3 — TRIANGLE FLIGHT PATH

Mission

Create a triangle flight pattern.

Skills Learned

- Geometry
- Angles

Hint

A triangle uses 120° turns.

Suggested Logic

Repeat 3 times:

```
Fly Forward 60 cm
Rotate Right 120°
```

12. EXERCISE 4 — DRONE DANCE

Mission

Create a fun movement sequence.

Example

```
Take Off
Fly Up 30 cm
Rotate Left 360°
Fly Down 30 cm
Flip Forward
Land
```

Skills Learned

- Sequencing
- Creative programming

13. EXERCISE 5 — SPIRAL CHALLENGE

Mission

Make the drone move in a growing spiral.

Example Logic

```
Forward 20 cm
Turn Right 90°
```

```
Forward 40 cm
Turn Right 90°

Forward 60 cm
Turn Right 90°
```

Continue increasing the distance.

Skills Learned

- Patterns
- Variables
- Incrementing values

14. EXERCISE 6 — OBSTACLE MISSION

Mission

Create a mini obstacle course.

Example

Program the drone to:

- Fly forward
- Move left
- Move right
- Fly over an object
- Return home

Skills Learned

- Navigation
- Precision control

Extra Challenge Ideas

After the exercises, students can try:

- Creating letters in the air
- Programming race paths
- Synchronizing two drones

- Using loops for complex shapes
- Camera missions and aerial photos

Useful Beginner Tips

15. KEEP DISTANCES SMALL

Start with:

- 20–50 cm movements
- Slow speeds

TEST ONE BLOCK AT A TIME

Debugging is easier.

16. SAVE YOUR PROGRAMS

Create versions:

- square_v1
- square_v2

PRACTICE HOVERING

Stable flight is important before complex paths.

Conclusion

DroneBlocks is an excellent way to learn:

- Coding logic
- Robotics
- Problem solving
- Spatial thinking

By combining programming with real drone movement, students quickly understand how algorithms work in the physical world.

A good learning path is:

1. Basic movement
2. Shapes

3. Loops
4. Variables
5. Autonomous missions