CodeAIR Vocabulary By Mission

Mission 1 – Welcome	
Objective	The steps in the mission; has a goal to accomplish.
Text editor	Where you type the code.
Debugging	The process of understanding what the computer is actually doing and then changing the code to do what you want it to do.
Toolbox	A place in CodeSpace to keep information you learn about programming concepts so you can use it later when you need the information.
Simulation	A 3D environment that lets you see the robot move and interact in a virtual world.
Mission 2 – Introducing CodeAIR	
CodeAIR	A high performance micro-drone that's fully programmable in Python.
LEDs	Light emitting diodes; tiny and efficient electronic components that produce light. CodeAIR has 8 blue indicator LEDs, numbered 0 through 7.
Buttons	Momentary push buttons on CodeAIR that you can program. The user interface push buttons are B0 and B1.
Motors	Brushed DC motors that are electric and power the propellers to lift CodeAIR into the air and maneuver it around.
Static Electricity	A charge that builds and can cause a jolt and spark that happens when grounded.
CPU	Central Processing Unit; the brain of the computer. It interacts with all the peripherals.
Peripheral	Devices that give input or output. CodeAIR's peripherals include LED lights, speaker, motors, sensors and pushbuttons.
Code	Instructions to the computer.
Comment	Code that doesn't get run; notes in the code about what you are doing.
Module	Also known as a library; it contains pre-loaded code, like functions and methods, that can be used once the module is imported.
Mission 3 – Pre-Flight Check	
Pre-flight Checks	Going through a detailed checklist before every flight. The list includes lighting systems, safety devices, control surfaces, engines and navigation sensors.
Embedded systems programming	Writing code that goes in a tiny microcontroller embedded in an electronic device.
Sequence	Code that runs one line at a time, in order; sequential.
Sleep	Controlling the pace of code execution by using a delay timing tool
While loop	A statement that tells Python to repeat a block of code indented beneath it as long as the given condition is true.

Condition	An expression that evaluates to True or False (Boolean)
Infinite loop	Repeat a block of code while a condition is always True – doesn't end
Constants	Named values that don't change during program execution. Constants are usually defined at the top of program code, just below imports.
Scientific pitch notation	A method of specifying musical pitch by combining a musical note name (A-G) and a number identifying the pitch's octave (0-9).
RGB color	Digital colors made up of (RED, GREEN, BLUE) light. The three colors each have a brightness from 0-255 to create many colors. The values of each color are stored in a list or tuple.
Pixel LEDs	Multi-colored LEDs that can be controlled by the CPU; also known as NeoPixels.
Range	A sequence of numbers you can iterate over. When the range() function is used, the iteration starts at the first number (or default 0) and stops one integer before the last number. seq = range(5) will iterate over 0, 1, 2, 3, and 4.
Iteration (iterating)	Repeating, or iterating, through a sequence of some kind. Examples of a sequence are a range of numbers, a range of colors, a list or a tuple.
For loop	A way to perform iteration
Standard Navigation Lights	An international standard color scheme to indicate the orientation of the craft. Helpful for anti-collision. The lights are solid (not flashing) and positioned as follows: ● Green for starboard side (right) ● Red for port side (left) ● White for the backend, or tail
Mission 4 – Flight Safety	
Quadcopter Safety Guidelines	Steps to take to ensure personal safety when working with a drone. They include wearing protective gear, avoiding contact with moving parts, and operating in a clear area.
Safety interlock	A safety measure that prevents an electronic device from starting until an event is triggered, like a button press.
UX	User experience; it encompasses the navigation of a product and how easy to use it is.
Branching 'if' statement	A programming control structure that lets code do something different if a certain condition happens, like a button press. This is different from sequential or iteration.
Bounce	When the metal contacts of an electronic input peripheral like a button bounce a few times before coming to a rest. This problem could mean a peripheral is read more than once.
Function	Reusable code with a name. Making reusable components is a major goal of software engineering. Once a button is defined, it must be called before the code is executed.
Variable	A named value used in code, like a box with a label. Use the variable name instead of the value. A value can be any data type, including a number, a string (text) or a Boolean.
Torque	Rotational force produced by motors. When torque is produced, there is a naturally occurring force in the opposite direction.
Mission 5 – Hovering Flight	
Module	An external source of code that is outside your own source file; also known as a library.

Custom module	Some code that is in the same folder as your program and can be accessed by importing it.
docstring	A documentation string; a comment at the top of the file that explains what it does. Use triple quotes (‘ ’ ’ or “ ” ”) to start and stop a docstring.
Console	A window that lets you see output from print() statements.
Blocking function	A function that runs one line at a time, blocking your code from continuing until they are finished. Examples: steady() and sleep()
Non-Blocking function	A function that starts a movement, then returns to the code. Another command must be sent to change or stop the movement.
OODA loop	“Observe, orient, decide, act” – a continuous loop run by the CPU to keep the drone flying at a desired altitude.
Variable	A name attached to an object so your code can work with it. The object can be any data: a number, text, tuple, etc.
Tuple	Ranger data – a set of three values indicated with parenthesis (forward, up, down).
Polling	Repeatedly checking something to see if anything has changed.
Actuator	A device that receives signals and responds with a specific action. When flying a drone, the motors are actuators that receive input from sensors.
Updating a variable	Changing the value of a variable with assignment. An example is to increment a count by 1.
Dead reckoning	A type of navigation that calculates the vehicle’s position based on its known starting point, speed, direction and elapsed time.
Sensor-based navigation	A type of navigation that is adaptive, relying on real-time data gathered by sensors to detect obstacles and adjust course accordingly.
REPL	Repeat evaluate print loop; using the console to interactively enter commands and view outputs in a text format.
Mission 6 - Navigate	
Positioning systems	A system for determining the position of an object in space.
Flow sensor	A sensor used to track horizontal movement across a surface; essential for stable hover and precise navigation.
Delta	A change in position, symbol from the Greek letter Δ and used in math and science to represent change.
String	A data type that is a sequence of characters all strung together. Can be numbers, letters, spaces, whatever!
Format string	A template for printing a string using replacement fields that are designated with {curly braces}. This allows actual arguments to be inserted into the template.
MotionCommander Interface	An interface between Python code and the flight controller that provides a high-level flight control interface and uses onboard sensors to maintain stability.
Sensor fusion	When data from multiple sensors is combined. For example, combining altitude data from the laser ranger with the data from the flow sensor.

Under load	When a battery is powering peripherals, like CodeAIR's motors, it is under load.
Binary numbers	How computers deal with digits. Two states (on and off) are represented with 1 and 0.
Bit	A single binary digit (1 or 0)
Byte	An 8-bit number
Selectable operations UI	A user interface that uses one button to scroll through a menu and another button to confirm the current selection, and then start the action.
Exceptions	Errors that might happen during your program execution.
External positioning system	A positioning system that uses something outside the drone to determine location, such as GPS or a fixed-location beacon.