**AP CSP CodeBot**

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| **MISSION 3 Obj 7-9 Time and Motion** | | **Time: 45 minutes** |
| **Project Goal:** Students will learn the basics of using code to move the CodeBot.  **Learning Targets**   * I can use comments to explain my code. * I can move the CodeBot forward and rotationally. * I can follow an algorithm to accomplish a task. | **Key Concepts**   * If the CodeBot left and right motors are the same speed, the ‘bot moves forward. * If the CodeBot left and right motors are the same but opposite speeds, the ‘bot rotates. * The CodeBot can rotate either clockwise or counter-clockwise, depending on which motor is positive and the other negative. * Computers execute code in sequential steps. * Built-in functions come from libraries, like botcore or time. | |
| **Assessment Opportunities**   * Mission 3 Obj 7-9 Assignment * Quiz after Objective 6 * Submit the “MoveOut” program * Submit the “NavSquare\_obj9” program * [Obj 7-9 Kahoot Review](https://create.kahoot.it/share/firia-labs-codebot-mission-3-obj-7-9/ced9ca2e-c1c1-4779-8494-68e27eaa52db) | **Success Criteria**   * Write code to move the CodeBot forward * Write code to rotate the CodeBot * Incrementally test code * Write code to drive in a specified pattern | |
| **AP CSP Framework**  **AAP-2.A** Express an algorithm that uses sequencing without using a programming language.  **AAP-2.B** Represent a step-by-step algorithmic process using sequential code statements.  **Computational Practice 2.B** Implement and apply an algorithm.  **Computational Practice 4.C** Identify and correct errors in algorithms and programs, including error discovery through testing. | **Materials**   * Mission 3 Obj 7-9 Assignment / Answers * [Mission 3 Obj 7-9 Kahoot! Review](https://create.kahoot.it/share/firia-labs-codebot-mission-3-obj-7-9/ced9ca2e-c1c1-4779-8494-68e27eaa52db) * Solution code for MoveOut and NavSquare\_obj9 | |
| **Teacher Notes**   * This lesson is fairly straightforward. Give students time to experiment with different speeds. Charts are included on the assignment for objective 7 and objective 8. Students should try different combinations and record their findings. * Students will also need time to get their code just right for moving the ‘bot in a square. If they do a good job with experimenting during objectives 7 and 8, it will be easier to complete objective 9. You may want to guide students during those objectives, particularly objective 8 and turning. If they know the speed and time for rotating at a right angle, they will have less frustration. * Another suggestion for assessment is for students to keep a daily journal, or use a reflection form for students to process information they learned and reflect on questions they may still have. * Refer to the CodeBot Curriculum Guide for specific information about this mission. | | |