**Virtual Initio Programming: Introduction to Classes and Objects Exercises**

**AIM:** This exercise sheet provides additional exercises using Objects and Classes.

**Exercise 1:** Consider the Wall Following program you wrote for WS18. Convert this into a class WallFollower() with methods follow\_wall(side) (which follows a wall on side until the switch is pressed) and drive\_to\_wall(). Illustrate the use of this class by writing programs to create a WallFollower() object to get the Pi2Go robot to follow the wall into the house where the robot starts next to the wall and a second where it starts some way from the wall.

**Note:** When an object calls one of its own methods it needs to use self.*method\_name()* not just the method name.

**Exercise 2:** Adapt your WallFollower class so it is initialised with the side on which it should follow the wall and has a method follow\_wall(self) that only takes self as an argument. A program can use both a right wall follower and a left wall follower object. Illustrate the use of this class with a program that follows the wall on its right until it detects a black floor and then follows the wall on its left.

**Hint:** Note that direction still needs to be supplied to spin because it has to spin in both directions.

**Exercise 3:** Create a MachineLearner class from the program you wrote for WS24. This should have a learn() method that will learn to drive on around the black oval from **oval.xml** world and a follow\_policy() method that will just drive according to the learned reward table.



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