

# IHF: CODE - PYTHON WORKSHEET 6 - ACTIVITY 3

## Challenge - Can't Touch This - 15 points

1. You must get the Edison car to beep when it comes across an obstacle. (5 points)
2. You must get the Edison car to beep when it comes across an obstacle and then have the car turn 180 degrees and reverse when it is faced with an obstacle. (5 points)
3. You must get the Edison car to beep when it comes across an obstacle and then have the car move left or right when it is faced with an obstacle. (5 points)

## What you need to know

To use obstacle detection, you use the Ed.ObstacleDetectionBeam() function. Whenever you want to use Edison's obstacle detection beam in an EdPy program, you always need to turn the beam to 'on' before the beam is used in the program.

When using obstacle detection, you need to use a slightly lower speed to allow the robot to detect an obstacle before colliding with it. If the speed is too fast, the robot will crash into obstacles before being able to detect them.

Hint: Things you need to input for your car to detect obstacle:

- Ed.ObstacleDetectionBeam - will have to be on
- Ed.Drive - will be needed to have your car to drive until it finds an obstacle
- Ed.ReadObstacleDetection() - will read Edison's detection state, can be None, Right, Left or Ahead.

## Coding Examples

### To drive the car forward:

```
#-----Setup-----  
  
import Ed  
  
Ed.EdisonVersion = Ed.V2  
  
Ed.DistanceUnits = Ed.CM  
Ed.Tempo = Ed.TEMPO_MEDIUM  
  
#-----Your code below-----  
  
Ed.Drive(Ed.FORWARD, Ed.SPEED_6, 8)
```

### To drive the car backward:

```
#-----Setup-----  
  
import Ed  
  
Ed.EdisonVersion = Ed.V2  
  
Ed.DistanceUnits = Ed.TIME  
Ed.Tempo = Ed.TEMPO_MEDIUM  
  
#-----Your code below-----  
  
Ed.Drive(Ed.BACKWARD, Ed.SPEED_6, 8)
```

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## CODING EXAMPLES

To drive the car forward then backwards:

```
#-----Setup-----  
  
import Ed  
  
Ed.EdisonVersion = Ed.V2  
  
Ed.DistanceUnits = Ed.CM  
Ed.Tempo = Ed.TEMPO_MEDIUM  
  
#-----Your code below-----  
  
Ed.Drive(Ed.FORWARD, Ed.SPEED_9, 5)  
Ed.Drive(Ed.BACKWARD, Ed.SPEED_6, 4)
```

To drive the car forward for an unlimited distance then wait for 1000 milliseconds (1 second) before turning the motors off.

```
#-----Setup-----  
  
import Ed  
  
Ed.EdisonVersion = Ed.V2  
  
Ed.DistanceUnits = Ed.CM  
Ed.Tempo = Ed.TEMPO_MEDIUM  
  
#-----Your code below-----  
  
Ed.Drive(Ed.FORWARD, Ed.SPEED_9, Ed.DISTANCE_UNLIMITED)  
Ed.TimeWait(1000, Ed.TIME_MILLISECONDS)  
Ed.Drive(Ed.STOP, Ed.SPEED_6, 0)
```

To turn the car 90 degrees to the right.

To turn the car right change, Ed.SPIN\_LEFT.

```
#-----Setup-----  
  
import Ed  
  
Ed.EdisonVersion = Ed.V2  
  
Ed.DistanceUnits = Ed.CM  
Ed.Tempo = Ed.TEMPO_MEDIUM  
  
#-----Your code below-----  
Ed.Drive(Ed.SPIN_RIGHT, Ed.SPEED_7, 90)
```

To drive the car forward to the left.

To drive the car forward to the right, Ed.FORWARD\_RIGHT.

```
#-----Setup-----  
  
import Ed  
  
Ed.EdisonVersion = Ed.V2  
  
Ed.DistanceUnits = Ed.CM  
Ed.Tempo = Ed.TEMPO_MEDIUM  
  
#-----Your code below-----  
Ed.Drive(Ed.FORWARD_LEFT, Ed.SPEED_7, 10)
```

To have the car detect obstacles and when it does turn backward.

```
#-----Setup-----  
  
import Ed  
  
Ed.EdisonVersion = Ed.V2  
  
Ed.DistanceUnits = Ed.CM  
Ed.Tempo = Ed.TEMPO_MEDIUM  
  
#-----Your code below-----  
Ed.ObstacleDetectionBeam(Ed.ON)  
Ed.Drive(Ed.FORWARD, Ed.SPEED_3, 50)  
while Ed.ReadObstacleDetection() != Ed.OBSTACLE_NONE:  
    pass  
Ed.Drive(Ed.BACKWARD_RIGHT, Ed.SPEED_6, 145)
```