

For all code on this page assume you have the following available:

```
motorL    CON 12
motorR    CON 13
piezo     CON 15
```

Subroutines

FORWARD

```
PIVOT_LEFT    ' one twitch of a pivot to the left
PIVOT_RIGHT   ' one twitch of a pivot to the right
SPIN_LEFT     ' one twitch of a spin to the left
SPIN_RIGHT    ' one twitch of a spin to the right
```

```
myCounter VAR Word
```

Please state assumptions as necessary. Example:

- FOR counter = 1 to 50 ' 50 is enough to make my bot backup 1 tile

1. Assuming your robot was perfect, write the "PIVOT_LEFT" subroutine

PIVOT_LEFT:

```
PULSOUT motorL, 750
```

```
PULSOUT motorR, 900 'assuming fwd
```

RETURN

2. List the code necessary to make your robot drive in a square. It should stop after completing the square. Remember to state any necessary assumptions as a comment.

```
myCounter2 VAR Word
```

```
FOR myCounter = 1 to 4
  FOR myCounter2 = 1 to 20
```

'ASSUME 1 tile

```
  GOSUB FORWARD
```

```
  PAUSE 20
```

'OPTIONAL

```
  NEXT
```

```
FOR myCounter2 = 1 to 40
```

'ASSUME 90 degrees

```
  GOSUB SPINLEFT
```

```
  PAUSE 20
```

```
  NEXT
```

```
NEXT
```

3. Circle all bugs found in the following code and write the correction

```
' {$STAMP BS2}
' {$PBASIC 2.5}
```

```
motorL CON 12
motorR CON 13
```

```
myCounter VAR Word
loopCounter VAR Word
```

```
FOR loopCounter = 1 TO 4
```

```
FOR myCounter = 1 TO 50
```

```
GOSUB FWD
```

```
FOR myCounter2 = 1 TO 30
```

```
GOSUB SPIN_LEFT
```

```
NEXT
```

```
LOOP
```

```
QUIT
```

```
FORWARD:
```

```
PULSOUT motorL, 900
```

```
PULSOUT motorR, 600
```

```
PAUSE 20
```

```
RETURN
```

```
SPIN_LEFT:
```

```
PULSOUT motorL, 600
```

```
PULSOUT motorR, 600
```

```
PAUSE 20
```

```
RETURN
```

FORWARD
NEXT
my Counter

NEXT
END

4. In the box on the right, sketch the path the following code would cause the robot to drive:
(assume logical behavior for subroutines: ex. RIGHT_90 = 90 degree turn to the right)

```
direction VAR Word
counter VAR Word
```

```
direction = 1
```

```
FOR counter = 1 TO 6
```

```
GOSUB forward_1_tile
```

```
IF direction = 3 THEN
```

```
GOSUB turn_90_right
```

```
direction = 1
```

```
ELSEIF direction = 2 THEN
```

```
GOSUB turn_90_right
```

```
direction = 3
```

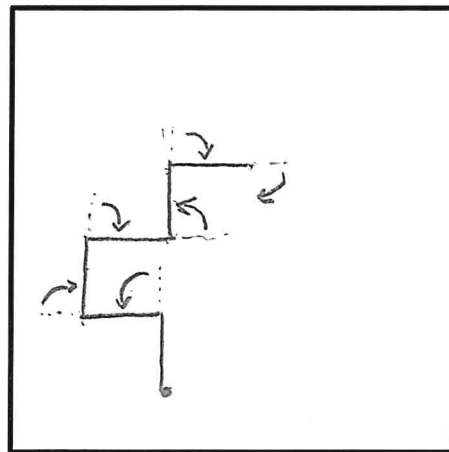
```
ELSEIF direction = 1 THEN
```

```
GOSUB turn_90_left
```

```
direction = 2
```

```
ENDIF
```

```
NEXT
```



dir	Count
X	X
Z	Z
B	B
X	H
Z	B
B	6
1	7