ICS2O Name: _____

Robotics Practice

1. Given the following, use the provided subroutines to make your robot drive a SINGLE time as shown in the diagram. It should be two tiles wide in all directions.

Please note:

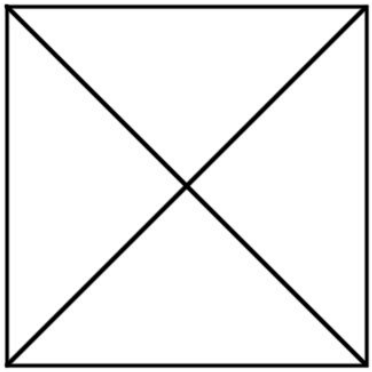
- The robot never drives backwards
- Do not directly control your motors (no 'PULSOUT')
- Do not use the PAUSE command
- Assume you are writing only the main code, no startup or subroutines
- Your code should be as efficient as possible
- Remember to STATE ALL ASSUMPTIONS

Available subroutines:

- FWD (Single pulse forward)
- SPIN_LEFT_45 (45° turn)
- SPIN_LEFT_90 (90° turn)
- SPIN_LEFT_135 (135° turn)

Variables declared:

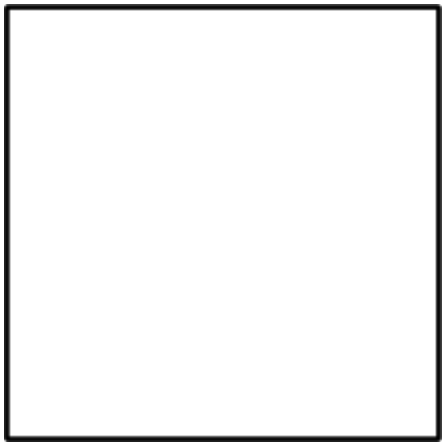
- counter1 VAR Word
- counter2 VAR Word



2. In the box on the right, sketch the path the following code would produce: *(Assume logical behavior for subroutines: ex. RIGHT_90 = 90 degree turn to the right)*

```
counter VAR Word
flip VAR Byte

flip = 0
FOR counter = 1 TO 4
  IF flip = 0 THEN
    GOSUB curveRightSemiCircle    'diameter of 1 tile
    flip = 1
  ELSE
    GOSUB curveLeftSemiCircle     'diameter of 1 tile
    flip = 0
  ENDIF
NEXT
GOSUB spinLeft_90
FOR counter = 1 TO 200  'assume enough for 4 tiles
  GOSUB forward
NEXT
```



3. Examine the following code. Circle all errors.

For this question, this is the whole code. If this were pasted into the editor, what problems would it find?

If any, treat any repeated error as a single error. Can you find all of them?

This is a really silly program. Don't worry about why it does what it does; just find the problems.

```
' -----[ Variables ]----
speedLeft     VAR Bite
speedRight    VAR Bite
goalLeft      VAR Bite
goalRight     VAR Bite

' -----[ Main Code ]----
speedLeft = 0
speedRight = 0
goalRight = 100
goalLeft = 100

DO
  GOSUB changeSpeed
  GOSUB drive
NEXT

' -----[ Subroutines ]---------------
adjustSpeed:
  FOR speedLeft =< goalLeft THEN
    speedLeft = speedLeft + 1
  ELSEIF speedLeft > goalLeft THEN
    speedLeft = speedLeft - 1
  ENDIF
  IF speedRight =< goalRight THEN
    speedRight = speedRight + 1
  ELSEIF speedRight > goalRight THEN
    speedRight = speedRight - 1
  ENDIF
END

drive:
  PULSOUT speedLeft, 12
  PULSOUT speedRight, 13
  PAUSE 20
RETURN
```