ASUMobiCarG01
Instruction set

The instruction set of the accurate drive mode of the car consists of 4 main instructions:

- L (Line instruction)
- A (Arc instruction)
- D (Delay instruction)
- R (Repeat instruction)

Pseudo Instructions

The car also supports 3 pseudo instructions that are translated into the main instructions before being stored in memory , they are :

- G (rectanGle instruction)
- I (Infinity shape instruction)
- P (regular Polygon instruction)

Main Instructions

Line instruction:

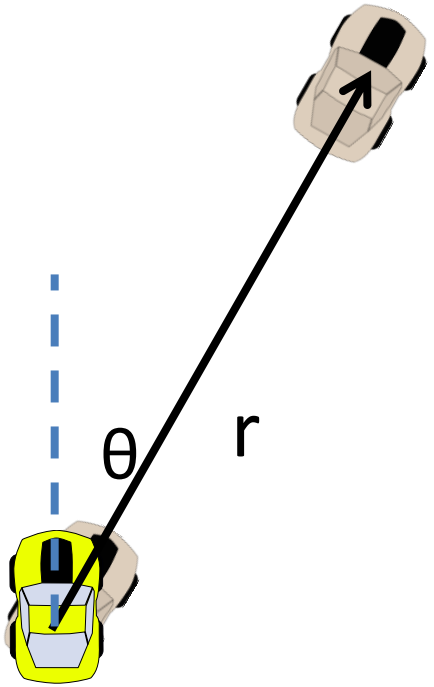
L r , θ ;

r : The distance the car will move in cm

- Can take values from -1023 to 1023
- Negative values will make the car move backwards instead of forward

θ : The angle of the car turns before moving in degrees

- Can take values from -1023 to 1023
- Negative values will make the car turn anti-clockwise instead of clockwise



Arc instruction:

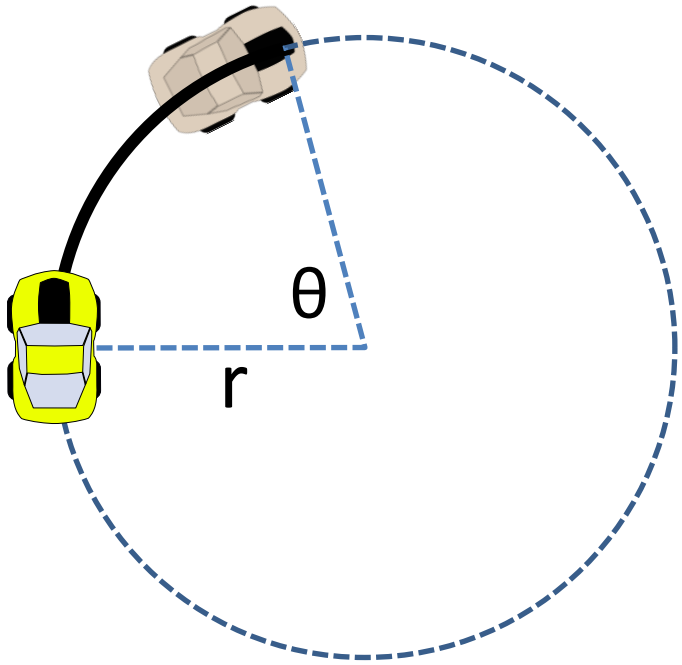
A r , θ ;

r : The radius of the circle from which the arc is taken in cm

- Can take values from -1023 to 1023
- Negative values will make the circle on the left of the car

θ : The angle of the arc in degrees

- Can take values from -1023 to 1023
- Negative values will make the car move backwards instead of forward



Delay instruction:

D m_sec;

m_sec : The time the car will stop without executing any commands in milli-seconds

- It can take values from 0 to 1,048,575

- ❖ This instruction is used between other instructions to make a delay between them
- ❖ It's the only instruction with one argument
- ❖ It supports delay up to 17 min 28 sec

Repeat instruction:

R lines , times *;*

lines : The number of lines to be repeated

- Can take values from -1023 to 1023
- Negative values will repeat the lines before the command itself instead of the lines after it

times : Sets the number of times the lines will be repeated

- Can take values from 0 to 1023

This instruction is used to conserve memory by repeating instructions

Pseudo Instructions

Rectangle instruction:

R l, w *;*

l : The horizontal length of the rectangle

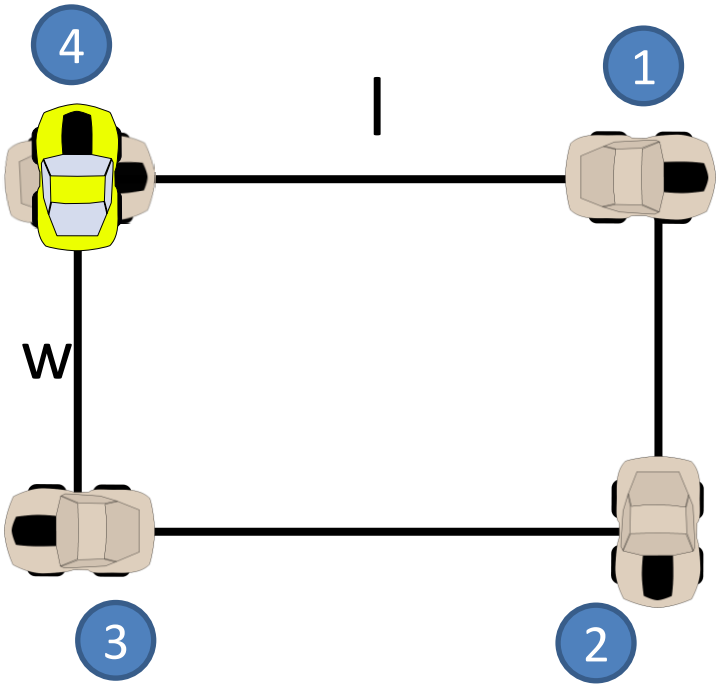
- Can take values from -1023 to 1023
- Negative values will make the rectangle on the left side of the car

w : The vertical width of the rectangle

- Can take values from -1023 to 1023
- Negative values will make the rectangle on the upper side of the car

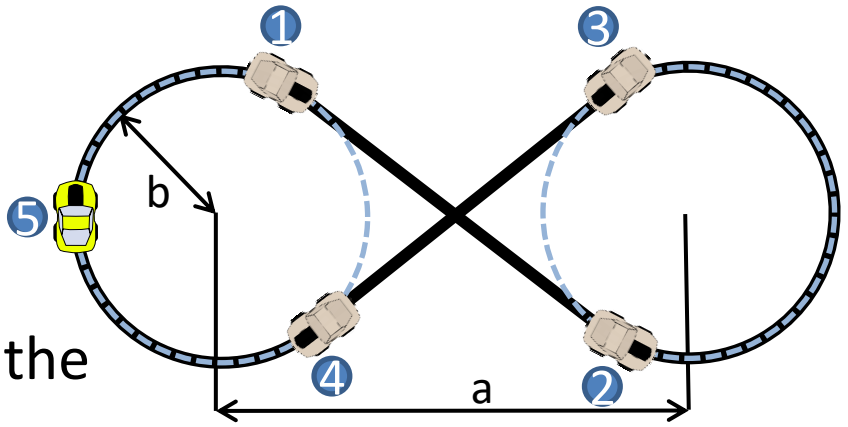
Note:

This instruction takes 3 places in memory when saved , or takes 2 places if the length and width are equal (square)



Infinity shape instruction:

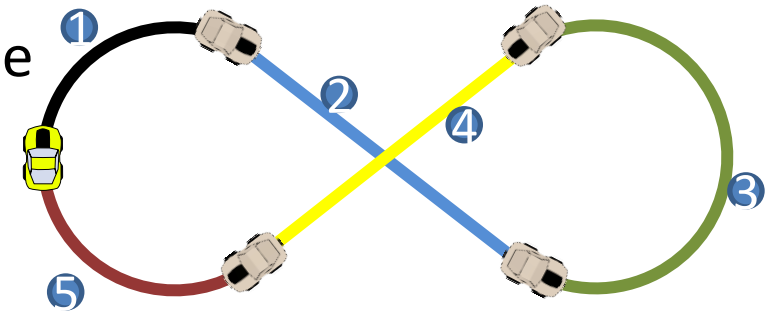
I a , b ;



a : The horizontal between centers the 2 circles in cm

b : The radius of the circle

- Can take values from -1023 to 1023
- Negative values will make the shape on the left side of the car



Note:

❖ This instruction takes 5 places in memory when saved

❖ The values of a & b must correspond to the condition a≥2b

Regular Polygon instruction:

P a , b ;

a : number of sides of the polygon

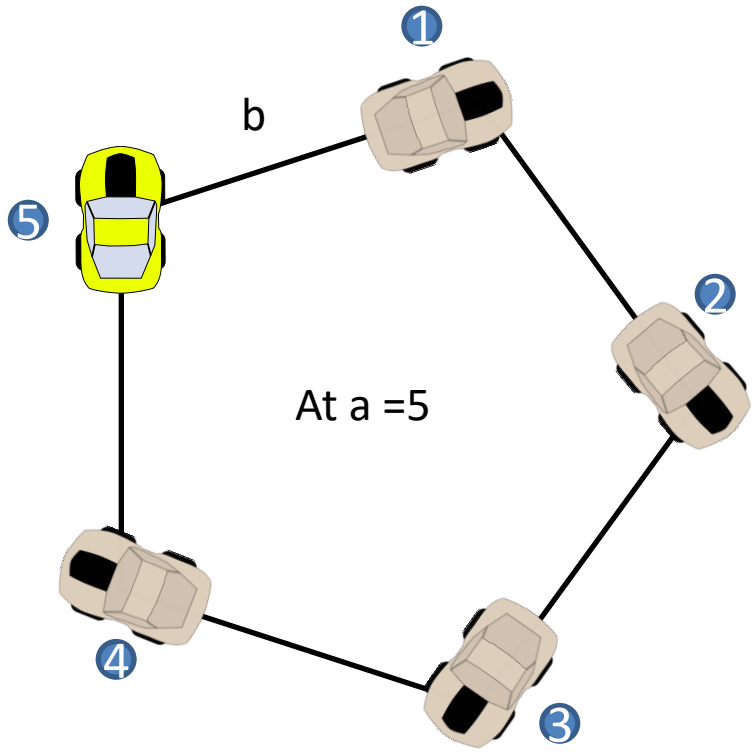
- Can take values from 3 to 1023

b : The vertical width of the rectangle

- Can take values from 0 to 1023

Note:

❖ This instruction takes 2 places in memory when saved



System Instructions

These are the instructions directed to the program that runs the instructions and they are:

- StopReading; (exits instruction reading mode)
- ClearAll; (clears all instructions in memory)
- ClearLast; (clears last instruction in memory)
- Start; (start execution of saved instructions)

Additional Info

- The car can store up to 400 instructions in memory before starting execution
- The instructions of the car are not case sensetive and any white spaces will be ignored
- All instructions should end with a semi-colon ”;” , and arguments must correspond to their respective conditions
- If any command or argument is out of bound it will be prompted in the bluetooth terminal