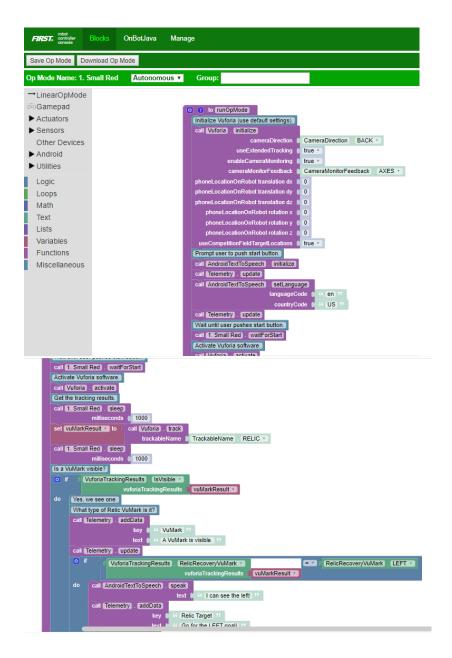# Robot X Games

We have programs for 4 autonomous starting positions: small red, big red, small blue, big blue, and a driver-controlled program called Tele-Op. The Blocks programming does not have a print function, so we copied and pasted our code into a Word document the best we could.

1. Small Red

```
key        Hello Target
text   " Go for the LEFT goal! "
call Telemetry . update
Deactivate before exiting.
call Vuforia . deactivate
set slider . Direction . to Direction FORWARD
set Jewel Color . Position . to 0.36
set Gripper . Position . to 0.45
set slider . Power . to 1
call 1. Small Red . sleep
    milliseconds 500
call color sensor . enableLed
    enable false
call 1. Small Red . sleep
    milliseconds 500
call color sensor . enableLed
    enable true
set slider . Power . to 0
set Jewel Color . Position . to 0.81
call 1. Small Red . sleep
    milliseconds 5000
set Color . to call Color . rgbToColor
    red color sensor . Red
    green color sensor . Green
    blue color sensor . Blue
if  Color . Saturation ≥ 0.5  and    Color . Hue > 260  or   Color . Hue < 37.5
    red color sensor . Red
    green color sensor . Green
    blue color sensor . Blue
if  Color . Saturation ≥ 0.5  and    Color . Hue > 260  or   Color . Hue < 37.5
        color Color          color Color          color Color
do  Red
    call AndroidTextToSpeech . speak
        text " I can see Red! "
    set Jewel Color . Position . to 0.81
    set left_drive . Direction . to Direction REVERSE
    set right_drive . Direction . to Direction FORWARD
    set left_drive . Power . to 0
    set right_drive . Power . to 0
    call 1. Small Red . sleep
        milliseconds 975
    knock off blue forward
    set left_drive . Power . to -0.25
    set right_drive . Power . to -0.25
    call 1. Small Red . sleep
        milliseconds 250
    set Power
      right_drive . to 0
      left_drive . to 0
    call 1. Small Red . sleep
        milliseconds 500
    set left_drive . Direction . to Direction REVERSE
    set right_drive . Direction . to Direction FORWARD
    set left_drive . Power . to 0
    set right_drive . Power . to 0
    call 1. Small Red . sleep
        milliseconds 975
    knock off blue forward
    set left_drive . Power . to -0.25
    set right_drive . Power . to -0.25
    call 1. Small Red . sleep
        milliseconds 250
    set Power
      right_drive . to 0
      left_drive . to 0
    call 1. Small Red . sleep
        milliseconds 500
    set Jewel Color . Position . to 0.36
    call 1. Small Red . sleep
        milliseconds 1500
    go straight
    set Power
      right_drive . to -0.2
      left_drive . to -0.2
    call 1. Small Red . sleep
        milliseconds 1500
    set Power
      ri
```

turn and deposit glyphs

set left_drive . Direction to Direction FORWARD
set right_drive . Direction to Direction REVERSE
set left_drive . Power to 0
set right_drive . Power to 0
call 1. Small Red . sleep
milliseconds 500
set Power
right_drive to 0.4
left_drive to -0.8
call 1. Small Red . sleep
milliseconds 600
set Power
right_drive to 0
left_drive to 0
call 1. Small Red . sleep
milliseconds 1000

final forward to deposit glyphs
set Power
right_drive to 0.2
left_drive to 0.2
call 1. Small Red . sleep
milliseconds 1200

else if Color . Saturation ≥ 0.5 and
color Color
Color . Hue ≥ 180 and
color Color
Color . Hue ≤ 270
color Color

milliseconds 1200

else if Color . Saturation ≥ 0.5 and
color Color
Color . Hue ≥ 180 and
color Color
Color . Hue ≤ 270
color Color

do Blue
call AndroidTextToSpeech . speak
text " I can see Blue! "
set Jewel Color . Position to 0.81
set left_drive . Direction to Direction FORWARD
set right_drive . Direction to Direction REVERSE
set left_drive . Power to 0
set right_drive . Power to 0
call 1. Small Red . sleep
milliseconds 1000

go back, knock off blue
set left_drive . Power to -0.2
set right_drive . Power to -0.2
call 1. Small Red . sleep
milliseconds 200
set left_drive . Power to 0
set right_drive . Power to 0
call 1. Small Red . sleep
milliseconds 400
set Jewel Color . Position to 0.36
call 1. Small Red . sleep
milliseconds 600
right_drive to 0.3
left_drive to 0.3
call 1. Small Red . sleep
milliseconds 1760
set Power
right_drive to 0
left_drive to 0
call 1. Small Red . sleep
milliseconds 1000

(turn)
set Power
right_drive to 0.8
left_drive to -0.4
call 1. Small Red . sleep
milliseconds 735
set Power
right_drive to 0
left_drive to 0
call 1. Small Red . sleep
milliseconds 1000

final forward to deposit glyphs
set right_drive . Power to 0.2
set left_drive . Power to 0.2
call 1. Small Red . sleep
milliseconds 1600

else No Jewel

```
else [No Jewel]
    call AndroidTextToSpeech . speak
                              text " I don't see a jewel "
    set Jewel Color . Position to 0.36
    call 1. Small Red . sleep
                       milliseconds 1500
    set left_drive . Direction to Direction REVERSE
    set right_drive . Direction to Direction FORWARD
    set left_drive . Power to 0
    set right_drive . Power to 0
    call 1. Small Red . sleep
                       milliseconds 975
    [knock off blue forward]
    set left_drive . Power to -0.3
    set right_drive . Power to -0.3
    call 1. Small Red . sleep
                       milliseconds 475
    set Power
        right_drive to 0
        left_drive to 0
    call 1. Small Red . sleep
                       milliseconds 1000
    [go straight]
    set Power
        right_drive to -0.2
        left_drive to -0.2

    set right_drive . Direction to Direction REVERSE
    set left_drive . Power to 0
    set right_drive . Power to 0
    call 1. Small Red . sleep
                       milliseconds 500
    set Power
        right_drive to 0.4
        left_drive to -0.8
    call 1. Small Red . sleep
                       milliseconds 600
    set Power
        right_drive to 0
        left_drive to 0
    call 1. Small Red . sleep
                       milliseconds 300
    [final forward to deposit glyphs]
    set left_drive . Direction to Direction FORWARD
    set right_drive . Direction to Direction REVERSE
    set Power
        right_drive to 0
        left_drive to 0
    call 1. Small Red . sleep
                       milliseconds 500
    set Power
        right_drive to 0.2
        left_drive to 0.2

call Telemetry . addData
              key " Relic Target "
             text " Go for the CENTER goal! "
call Telemetry . update
[Deactivate before exiting.]
call Vuforia . deactivate
set slider . Direction to Direction FORWARD
set Jewel Color . Position to 0.36
set Gripper . Position to 0.45
set slider . Power to 1
call 1. Small Red . sleep
                   milliseconds 500
call color sensor . enableLed
                    enable false
call 1. Small Red . sleep
                   milliseconds 500
call color sensor . enableLed
                    enable true
set slider . Power to 0
set Jewel Color . Position to 0.81
call 1. Small Red . sleep
                   milliseconds 5000
set Color to call Color . rgbToColor
                          red color sensor . Red
                          green color sensor . Green
                          blue color sensor . Blue
```

```
if    Color . Saturation ≥ 0.5  and  Color . Hue > 260  or  Color . Hue < 37.5
         color Color                     color Color              color Color

do  Red
    call AndroidTextToSpeech . speak
                          text " I can see Red! "
    set Jewel Color . Position to 0.81
    set left_drive . Direction to Direction REVERSE
    set right_drive . Direction to Direction FORWARD
    set left_drive . Power to 0
    set right_drive . Power to 0
    call 1. Small Red . sleep
                 milliseconds 975
    knock off blue forward
    set left_drive . Power to -0.2
    set right_drive . Power to -0.2
    call 1. Small Red . sleep
                 milliseconds 250
    set left_drive . Power to 0
    set right_drive . Power to 0
    call 1. Small Red . sleep
                 milliseconds 500
    set Jewel Color . Position to 0.36
    call 1. Small Red . sleep
                 milliseconds 1500
    go straight
      left_drive to 0
    call 1. Small Red . sleep
                 milliseconds 300
    turn and deposit glyphs
    set left_drive . Direction to Direction FORWARD
    set right_drive . Direction to Direction REVERSE
    set left_drive . Power to 0
    set right_drive . Power to 0
    call 1. Small Red . sleep
                 milliseconds 500
    set Power
      right_drive to 0.4
      left_drive to -0.8
    call 1. Small Red . sleep
                 milliseconds 730
    set Power
      right_drive to 0
      left_drive to 0
    call 1. Small Red . sleep
                 milliseconds 1000
    final forward to deposit glyphs
    set Power
      right_drive to 0.19
      left_drive to 0.19
    call 1. Small Red . sleep
                 milliseconds 1400
else if
                 milliseconds 1400
else if   Color . Saturation ≥ 0.5  and  Color . Hue ≥ 180  and  Color . Hue ≤ 270
             color Color                     color Color              color Color

do  Blue
    call AndroidTextToSpeech . speak
                          text " I can see Blue! "
    set Jewel Color . Position to 0.81
    set left_drive . Direction to Direction FORWARD
    set right_drive . Direction to Direction REVERSE
    set left_drive . Power to 0
    set right_drive . Power to 0
    call 1. Small Red . sleep
                 milliseconds 1000
    go back, knock off blue
    set left_drive . Power to -0.2
    set right_drive . Power to -0.2
    call 1. Small Red . sleep
                 milliseconds 200
    set left_drive . Power to 0
    set right_drive . Power to 0
    call 1. Small Red . sleep
                 milliseconds 500
    set Jewel Color . Position to 0.36
    call 1. Small Red . sleep
                 milliseconds 500
```

```
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
    milliseconds 1000
final forward to deposit glyphs
set left_drive ▾ . Direction ▾ to Direction FORWARD ▾
set right_drive ▾ . Direction ▾ to Direction REVERSE ▾
call 1. Small Red . sleep
    milliseconds 700
set right_drive ▾ . Power ▾ to 0.19
set left_drive ▾ . Power ▾ to 0.19
call 1. Small Red . sleep
    milliseconds 1600
else No color
call AndroidTextToSpeech . speak
    text " I don't see a Jewel "
set Jewel Color ▾ . Position ▾ to 0.36
call 1. Small Red . sleep
    milliseconds 1500
set left_drive ▾ . Direction ▾ to Direction REVERSE ▾
set right_drive ▾ . Direction ▾ to Direction FORWARD ▾
set left_drive ▾ . Power ▾ to 0
set right_drive ▾ . Power ▾ to 0
call 1. Small Red . sleep
    milliseconds 975
knock off blue forward
    milliseconds 250
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
    milliseconds 1000
go straight
set Power ▾
right_drive ▾ to -0.25
left_drive ▾ to -0.25
call 1. Small Red . sleep
    milliseconds 1350
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
    milliseconds 300
turn and deposit glyphs
set left_drive ▾ . Direction ▾ to Direction FORWARD ▾
set right_drive ▾ . Direction ▾ to Direction REVERSE ▾
set left_drive ▾ . Power ▾ to 0
set right_drive ▾ . Power ▾ to 0
call 1. Small Red . sleep
    milliseconds 500
second turn
set Power ▾
right_drive ▾ to 0.4
    milliseconds 700
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
    milliseconds 1000
set Power ▾
right_drive ▾ to 0.19
left_drive ▾ to 0.19
call 1. Small Red . sleep
    milliseconds 1400
else if VuforiaTrackingResults . RelicRecoveryVuMark ▾        = ▾  RelicRecoveryVuMark . RIGHT ▾
                vuforiaTrackingResults vuMarkResult ▾
do   call AndroidTextToSpeech . speak
        text " I can see the right! "
call Telemetry . addData
        key " Relic Target "
        text " Go for the RIGHT goal! "
call Telemetry . update
Deactivate before exiting.
call Vuforia . deactivate
set slider ▾ . Direction ▾ to Direction FORWARD ▾
set Jewel Color ▾ . Position ▾ to 0.36
set Gripper ▾ . Position ▾ to 0.45
set slider ▾ . Power ▾ to 1
call 1. Small Red
```

```
milliseconds  500
call color sensor . enableLed
                enable  false
call 1. Small Red . sleep
         milliseconds  500
call color sensor . enableLed
                enable  true
set slider . Power to  0
set Jewel Color . Position to  0.81
call 1. Small Red . sleep
         milliseconds  5000
set Color to  call Color . rgbToColor
                  red  color sensor . Red
                green  color sensor . Green
                 blue  color sensor . Blue
if     Color . Saturation  ≥  0.5   and
           color  Color                         Color . Hue  >  260   or   Color . Hue  <  37.5
                                                   color  Color                  color  Color
do  Red
    call AndroidTextToSpeech . speak
                           text  " I can see Red! "
    set Jewel Color . Position to  0.81
    set left_drive . Direction to  Direction  REVERSE
    set right_drive . Direction to  Direction  FORWARD
    set left_drive . Power to  0
    set right_drive . Power to  0

    set left_drive . Direction to  Direction  REVERSE
    set right_drive . Direction to  Direction  FORWARD
    set left_drive . Power to  0
    set right_drive . Power to  0
    call 1. Small Red . sleep
             milliseconds  975
    knock off blue forward
    set left_drive . Power to  -0.25
    set right_drive . Power to  -0.25
    call 1. Small Red . sleep
             milliseconds  300
    set Power
    right_drive to  0
    left_drive to  0
    call 1. Small Red . sleep
             milliseconds  500
    set Jewel Color . Position to  0.36
    call 1. Small Red . sleep
             milliseconds  1500
    go straight
    set Power
    right_drive to  -0.25
    left_drive to  -0.25
    call 1. Small Red . sleep
             milliseconds  1150
    set Power

    left_drive to  0.8
    call 1. Small Red . sleep
             milliseconds  900
    set Power
    right_drive to  0
    left_drive to  0
    call 1. Small Red . sleep
             milliseconds  1000
    final forward to deposit glyphs
    set left_drive . Direction to  Direction  FORWARD
    set right_drive . Direction to  Direction  REVERSE
    set Power
    right_drive to  0
    left_drive to  0
    call 1. Small Red . sleep
             milliseconds  500
    set Power
    right_drive to  0.19
    left_drive to  0.19
    call 1. Small Red . sleep
             milliseconds  1700
else if    Color . Saturation  ≥  0.5   and
               color  Color                     Color . Hue  ≥  180   and   Color . Hue  ≤  270
                                                   color  Color                  color  Color
do  Blue
    call AndroidTextToSpeech . speak
```

```
do   Blue
     call AndroidTextToSpeech . speak
                          text  " I can see Blue! "
     set Jewel Color . Position to  0.81
     set left_drive . Direction to  Direction FORWARD
     set right_drive . Direction to  Direction REVERSE
     set left_drive . Power to  0
     set right_drive . Power to  0
     call 1. Small Red . sleep
                    milliseconds  1000
     go back, knock off blue
     set left_drive . Power to  -0.2
     set right_drive . Power to  -0.2
     call 1. Small Red . sleep
                    milliseconds  250
     set left_drive . Power to  0
     set right_drive . Power to  0
     call 1. Small Red . sleep
                    milliseconds  500
     set Jewel Color . Position to  0.36
     call 1. Small Red . sleep
                    milliseconds  400
     go forward
     set Power
        right_drive to  0.3
        left_drive to  0.3
     call 1. Small Red . sleep
                    milliseconds  1670
     set Power
        right_drive to  0
        left_drive to  0
     call 1. Small Red . sleep
                    milliseconds  1000
     (turn)
     set Power
        right_drive to  0.8
        left_drive to  -0.4
     call 1. Small Red . sleep
                    milliseconds  990
     set Power
        right_drive to  0
        left_drive to  0
     call 1. Small Red . sleep
                    milliseconds  1000
     final forward to deposit glyphs
     set right_drive . Power to  0.19
     set left_drive . Power to  0.19
     call 1. Small Red . sleep
                    milliseconds  1900

else  No Jewel
     set right_drive . Power to  0.19
     set left_drive . Power to  0.19
     call 1. Small Red . sleep
                    milliseconds  1900

else  No Jewel
     call AndroidTextToSpeech . speak
                          text  " I don't see a jewel "
     set Jewel Color . Position to  0.36
     call 1. Small Red . sleep
                    milliseconds  1500
     set left_drive . Direction to  Direction REVERSE
     set right_drive . Direction to  Direction FORWARD
     set left_drive . Power to  0
     set right_drive . Power to  0
     call 1. Small Red . sleep
                    milliseconds  975
     knock off blue forward
     set left_drive . Power to  -0.2
     set right_drive . Power to  -0.2
     call 1. Small Red . sleep
                    milliseconds  300
     set Power
        right_drive to  0
        left_drive to  0
     call 1. Small Red . sleep
```

```
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
    milliseconds 500
go straight
set Power ▾
right_drive ▾ to -0.25
left_drive ▾ to -0.25
call 1. Small Red . sleep
    milliseconds 1200
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
    milliseconds 1000
turn and deposit glyphs
set Power ▾
right_drive ▾ to -0.4
left_drive ▾ to 0.8
call 1. Small Red . sleep
    milliseconds 840
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
    milliseconds 1000
final forward to deposit glyphs
set Power ▾
right_drive ▾ to 0.19
left_drive ▾ to 0.19
call 1. Small Red . sleep
    milliseconds 1800

else  call Telemetry . addData
          key  " Relic Target "
          text " VuMark of UNKNOWN type... "
      call Telemetry . update

else  No, we don't see one.
      call Telemetry . addData
          key  " VuMark "
          text " No VuMarks are visible. "
      call Telemetry . update
      Deactivate before exiting.
      call Vuforia . deactivate
      set slider ▾ . Direction ▾ to Direction FORWARD ▾
      set Jewel Color ▾ . Position ▾ to 0.36
      set Gripper ▾ . Position ▾ to 0.45
      set slider ▾ . Power ▾ to 1
      call 1. Small Red . sleep
          milliseconds 500
      call color sensor ▾ . enableLed
          enable false ▾
      call 1. Small Re...

    Color . Saturation ▾  ≥ ▾ 0.5   and ▾   Color . Hue ▾   > ▾ 260   or ▾   Color . Hue ▾   < ▾ 37.5
        color Color ▾                    color Color ▾                   color Color ▾

do  call AndroidTextToSpeech . speak
        text " I see nothing "
    call 1. Small Red . sleep
        milliseconds 1200
    Red
    call AndroidTextToSpeech . speak
        text " I see Red "
    set Jewel Color ▾ . Position ▾ to 0.81
    set left_drive ▾ . Direction ▾ to Direction REVERSE ▾
    set right_drive ▾ . Direction ▾ to Direction FORWARD ▾
    set Power ▾
    right_drive ▾ to 0
    left_drive ▾ to 0
    call 1. Small Red . sleep
        milliseconds 500
    knock off blue forward
    set left_drive ▾ . Power ▾ to -0.25
    set right_drive ▾ . Power ▾ to -0.25
    call 1. Small Red . sleep
        milliseconds 250
    set left_drive ▾ . Power ▾ to 0
    set right_drive ▾ . Power ▾ to 0
    call 1. Small Red . sleep
        milliseconds 500
```

```
right_drive ▾ to -0.3
left_drive ▾ to -0.3
call 1. Small Red . sleep
              milliseconds 1100
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
              milliseconds 500
turn to deposit glyphs
set left_drive ▾ . Direction ▾ to Direction FORWARD ▾
set right_drive ▾ . Direction ▾ to Direction REVERSE ▾
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
              milliseconds 1000
set left_drive ▾ . Power ▾ to -0.4
set right_drive ▾ . Power ▾ to 0.8
call 1. Small Red . sleep
              milliseconds 790
final forward to deposit glyphs
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
              milliseconds 1000
```

```
go back, knock off blue
set left_drive ▾ . Power ▾ to -0.2
set right_drive ▾ . Power ▾ to -0.2
call 1. Small Red . sleep
              milliseconds 200
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
              milliseconds 200
set Jewel Color ▾ . Position ▾ to 0.36
call 1. Small Red . sleep
              milliseconds 500
go forward
set Power ▾
right_drive ▾ to 0.3
left_drive ▾ to 0.3
call 1. Small Red . sleep
              milliseconds 1500
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
              milliseconds 1000
(turn)
set Power ▾
right_drive ▾ to 0.0
              milliseconds 750
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
call 1. Small Red . sleep
              milliseconds 1000
final forward to deposit glyphs
set left_drive ▾ . Power ▾ to 0.19
set right_drive ▾ . Power ▾ to 0.19
call 1. Small Red . sleep
              milliseconds 1900
```

```
else No Jewel
call AndroidTextToSpeech . speak
              text " I see nothing "
call 1. Small Red . sleep
              milliseconds 1200
call AndroidTextToSpeech . speak
              text " I don't see a jewel "
set Jewel Color ▾ . Position ▾ to 0.36
call 1. Small Red . sleep
              milliseconds 1500
set left_drive ▾ . Direction ▾ to Direction REVERSE ▾
set right_drive ▾ . Direction ▾ to Direction FORWARD ▾
set Power ▾
right_drive ▾ to 0
left_drive ▾ to 0
```

```
                    milliseconds    1000
        set  left_drive  . Power  to   -0.4
        set  right_drive  . Power  to   0.8
        call  1. Small Red  . sleep
                    milliseconds    790
        final forward to deposit glyphs
        set  Power
        right_drive  to   0
        left_drive  to   0
        call  1. Small Red  . sleep
                    milliseconds    1000
        set  Power
        right_drive  to   0.19
        left_drive  to   0.19
        call  1. Small Red  . sleep
                    milliseconds    1800
call  Telemetry  . update
set  Power
right_drive  to   0
left_drive  to   0
call  1. Small Red  . sleep
            milliseconds    500
drop
set  Jewel Color  . Position  to   0.36
set  slider  . Direction  to   Direction   REVERSE
set  slider  . Power
set  Gripper  . Position  to   0.16
set  slider  . Direction  to   Direction   FORWARD
set  slider  . Power  to   1
call  1. Small Red  . sleep
            milliseconds    500
set  slider  . Power  to   0
back up
set  left_drive  . Direction  to   Direction   REVERSE
set  right_drive  . Direction  to   Direction   FORWARD
set  left_drive  . Power  to   0
set  right_drive  . Power  to   0
call  1. Small Red  . sleep
            milliseconds    2000
set  left_drive  . Power  to   0.3
set  right_drive  . Power  to   0.3
call  1. Small Red  . sleep
            milliseconds    450
set  Power
right_drive  to   0
left_drive  to   0
call  1. Small Red  . sleep
            milliseconds    500
repeat  while   call  1. Small Red  . opModeIsActive
do   call  Telemetry  . update
     call  1. Small Red  . sleep
                 milliseconds    10
```