

Determine Color

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

```
rcv VAR Byte(10)
```

```
zigg:
```

```
SEROUT 10, 84, ["RS",CR] 'Reset Camera  
SERIN 9, 84, [WAIT (":")]
```

```
DEBUG CLS,"Resetting camera, preparing to auto-adjust light level",CR
```

```
SEROUT 10, 84, ["L1 1",CR] 'Turn on LED1  
SERIN 9, 84, [WAIT (":")]
```

```
SEROUT 10, 84, ["CR 18 44",CR] 'Begin auto-adjusting Light Level  
SERIN 9, 84, [WAIT (":")]  
PAUSE 5100
```

```
SEROUT 10, 84, ["CR 18 44 19 32",CR] 'Stop auto-adjusting  
SERIN 9, 84, [WAIT (":")]
```

```
DEBUG "Light level adjusted, setting data transfer mode",CR,CR
```

```
SEROUT 10, 84, ["L1 2", CR] 'LED1 on Automatic  
SERIN 9, 84, [WAIT (":")]
```

```
,
```

```
pause 100
```

```
SEROUT 10, 84, ["PM 1",CR] 'Set RAW data transfer mode  
SERIN 9, 84, [WAIT (":")]  
PAUSE 100
```

```
SEROUT 10, 84, ["RM 3",CR]  
PAUSE 100
```

```
SEROUT 10, 84, ["TW",CR] 'Get statistics
```

```
SERIN 9, 84, [STR rcv\8]
```

```
DEBUG "Red Mean ",DEC rcv(2) ,CR  
DEBUG "Green Mean ",DEC RCV(3) ,CR  
DEBUG "Blue Mean ",DEC RCV(4) ,CR  
DEBUG "Red Deviation ",DEC RCV(5) ,CR  
DEBUG "Green Deviation ",DEC RCV(6) ,CR  
DEBUG "Blue Deviation ",DEC RCV(7) ,CR  
DEBUG " ", CR
```

```
SEROUT 10,84,["TC",CR]
```

```
SERIN 9, 84, [STR rcv\10]
```

```

DEBUG "Middle Mass X ",DEC RCV(2) ,CR
DEBUG "Middle Mass Y ",DEC RCV(3) ,CR
DEBUG "Left Corner X ",DEC RCV(4) ,CR
DEBUG "Left Corner Y ",DEC RCV(5) ,CR
DEBUG "Right corner X ",DEC RCV(6) ,CR
DEBUG "Right Corner Y ",DEC RCV(7) ,CR
DEBUG "Pixels ",DEC RCV(8) ,CR
DEBUG "Confidence ",DEC RCV(9) ,CR
DEBUG " ", CR

```

```
_main:
```

```

' Probes for each and every color
SEROUT 10,84,["TC 0 45 0 45 50 255",CR]
'pause 100
SERIN 9, 84, [STR rcv\10]
IF (rcv(9) >= 75) THEN DEBUG "Blue, confid: ",DEC rcv(9),CR,CR

SEROUT 10,84,["TC 128 255 0 45 0 45",CR]
'PAUSE 100
SERIN 9, 84, [STR rcv\10]
'PAUSE 100
IF (rcv(9) >= 75) THEN DEBUG "Red, confid: ",DEC rcv(9),CR,CR

SEROUT 10,84,["TC 0 110 130 255 0 130",CR]
'pause 100
SERIN 9, 84, [STR rcv\10]
IF (rcv(9) >= 75) THEN DEBUG "Green, confid: ",DEC rcv(9),CR,CR

SEROUT 10, 84, ["TC 160 255 160 255 0 50",CR]
'pause 100
SERIN 9, 84, [STR rcv\10]
IF(rcv(9) >= 75) THEN DEBUG "Yellow, confid: ",DEC rcv(9),CR,CR

SEROUT 10, 84, ["TC 180 255 70 180 0 30",CR]
'pause 100
SERIN 9, 84, [STR rcv\10]
IF(rcv(9) >= 75) THEN DEBUG "Orange, confid: ",DEC rcv(9),CR,CR

GOTO _main

```

Insertion Sort

```

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

rcv VAR Byte(10)
pos0 VAR Byte
pos1 VAR Byte
x VAR Byte
temp VAR Word
ziggy VAR Nib(2)
order VAR Nib(4)
joey VAR Nib

```

```

backward VAR Byte(2)

maxjoey VAR Nib
joey = 0

DEBUG CR,"Number?",CR
DEBUGIN maxjoey
DEBUG CR,"Order?",CR
FOR x=0 TO maxjoey-1
DEBUGIN order(x)
NEXT

farleft VAR Byte

OUTPUT 5
OUTPUT 15

INPUT 0

'Stop movement
LOW 5
LOW 15

initialize:

'Lift shaft
FOR x=0 TO 100
PULSOUT 12,1000
PAUSE 10
NEXT

'Record initial Position
RCTIME 2,1,pos0
LOW 2
HIGH 2
DEBUG CLS,DEC pos0

pos0 = 1000

HIGH 15 'Move left

'Wait for limit switch to be pressed
DO WHILE(IN0 = 0)
RCTIME 2,1,pos0
LOW 2
HIGH 2
PAUSE 60
DEBUG CLS,DEC pos0
LOOP

farleft = pos0

LOW 15

PAUSE 1000

'Initialize camera (see determine color for details)

```

```
SEROUT 10, 84, ["RS",CR]
SERIN 9, 84, [WAIT (":")]
PAUSE 1000
DEBUG "Resetting camera, preparing to auto-adjust light level",CR
```

```
SEROUT 10, 84, ["L1 1",CR]
SERIN 9, 84, [WAIT (":")]
PAUSE 100
```

```
SEROUT 10, 84, ["CR 18 44",CR]
SERIN 9, 84, [WAIT (":")]
PAUSE 5100
```

```
SEROUT 10, 84, ["CR 18 44 19 32",CR]
SERIN 9, 84, [WAIT (":")]
PAUSE 100
DEBUG "Light level adjusted, setting data transfer mode",CR,CR
```

```
SEROUT 10, 84, ["L1 2", CR]
SERIN 9, 84, [WAIT (":")]
PAUSE 100
```

```
PAUSE 5000
```

```
SEROUT 10, 84, ["PM 1",CR]
SERIN 9, 84, [WAIT (":")]
PAUSE 100
```

```
SEROUT 10, 84, ["RM 3",CR]
PAUSE 100
SEROUT 10, 84, ["TW",CR]
```

```
SERIN 9, 84, [STR rcv\8]
PAUSE 100
```

```
DEBUG "Red Mean ",DEC rcv(2) ,CR
DEBUG "Green Mean ",DEC RCV(3) ,CR
DEBUG "Blue Mean ",DEC RCV(4) ,CR
DEBUG "Red Deviation ",DEC RCV(5) ,CR
DEBUG "Green Deviation ",DEC RCV(6) ,CR
DEBUG "Blue Deviation ",DEC RCV(7) ,CR
DEBUG " ", CR
```

```
SEROUT 10,84,["TC",CR]
SERIN 9, 84, [STR rcv\10]
PAUSE 100
```

```
DEBUG "Middle Mass X ",DEC RCV(2) ,CR
DEBUG "Middle Mass Y ",DEC RCV(3) ,CR
DEBUG "Left Corner X ",DEC RCV(4) ,CR
DEBUG "Left Corner Y ",DEC RCV(5) ,CR
DEBUG "Right corner X ",DEC RCV(6) ,CR
DEBUG "Right Corner Y ",DEC RCV(7) ,CR
```

```
DEBUG "Pixels ",DEC RCV(8) ,CR
DEBUG "Confidence ",DEC RCV(9) ,CR
DEBUG " ", CR
HIGH 5
```

seekandlift:

'Update position

RCTIME 2,1,pos0

LOW 2

HIGH 2

DEBUG CLS,DEC pos0

'Probe for colors

SEROUT 10,84,["TC 0 110 0 110 110 255",CR]

'pause 100

SERIN 9, 84, [STR rcv\10]

PAUSE 12

IF (rcv(9) >= 75) THEN GOTO official_b

SEROUT 10,84,["TC 0 130 130 255 0 130",CR]

'pause 100

SERIN 9, 84, [STR rcv\10]

PAUSE 12

IF (rcv(9) >= 75) THEN GOTO official_g

SEROUT 10,84,["TC 100 255 0 45 0 45",CR]

'PAUSE 100

SERIN 9, 84, [STR rcv\10]

PAUSE 12

IF (rcv(9) >= 75) THEN GOTO official_r

SEROUT 10, 84, ["TC 180 255 70 180 0 50",CR]

'pause 100

SERIN 9, 84, [STR rcv\10]

PAUSE 12

IF(rcv(9) >= 75) THEN official_o

jigg:

PAUSE 60

GOTO seekandlift

official:

'See if color is what we're looking for

IF(NOT (order(joey) = ziggy(1))) THEN seekandlift

joey = joey + 1

LOW 5

LOW 15

'Pick up and move

HIGH 15

pos1 = 1000

DO WHILE(pos1 > pos0 - 25)

RCTIME 2,1,pos1

LOW 2

```
HIGH 2
DEBUG CLS,DEC pos1',CR,"Red conf: ",DEC rcv(9)
PAUSE 60
LOOP
LOW 15
```

```
meesh:
FOR x=0 TO 100
PULSOUT 12,500
PAUSE 10
NEXT
```

```
HIGH 5
temp = pos1
DO WHILE(pos1 <= temp + 14)
RCTIME 2,1,pos1
LOW 2
HIGH 2
DEBUG CLS,DEC pos1
PAUSE 60
LOOP
```

```
LOW 5
```

```
FOR x=0 TO 100
PULSOUT 12,1000
PAUSE 10
NEXT
```

```
HIGH 15
temp = pos1
DO WHILE(pos1 >= temp - 45)
RCTIME 2,1,pos1
LOW 2
HIGH 2
DEBUG CLS,DEC pos1
PAUSE 60
LOOP
```

```
LOW 15
```

```
FOR x=0 TO 100
PULSOUT 12,500
PAUSE 10
NEXT
```

```
HIGH 15
temp = pos1
DO WHILE(pos1 >= temp - 5)
RCTIME 2,1,pos1
LOW 2
HIGH 2
DEBUG CLS,DEC pos1
PAUSE 60
LOOP
LOW 15
```

```
IF((joey > maxjoey - 1)) THEN GOTO done
```

```
FOR x=0 TO 100  
PULSOUT 12,1000  
PAUSE 10  
NEXT  
HIGH 5  
GOTO seekandlift
```

```
done:
```

```
END
```

```
official_r:  
ziggy(1) = 0  
PAUSE 30  
GOTO official
```

```
official_o:  
ziggy(1) = 1  
PAUSE 15  
GOTO official
```

```
official_b:  
ziggy(1) = 2  
PAUSE 4  
GOTO official
```

```
official_g:  
ziggy(1) = 3  
GOTO official
```