



Lesson 1 | Warmup

This is a Pixel Bots JavaScript exercise. In Pixel Bots we will program bots to paint pictures using Code Elements.

Code Elements

up()
left()
paint()
down()
right()

Problem 1

Pixel Bot Read Code: You are a pixel bot. Read the code and paint the picture.



up()
paint()
right()



up()
right()
paint()





Lesson 1 | Worksheet 1

This is a Pixel Bots Javascript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up() down()
left() right()
paint()

Example



```
1 up()  
2 right()  
3 paint()
```

Problems

You are a pixel bot. Read the code and paint the picture.



```
1 right()  
2 right()  
3 paint()  
4 up()
```

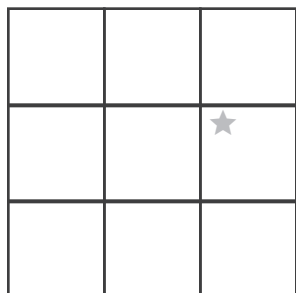


```
1 right()  
2 paint()  
3 up()  
4 paint()
```





Lesson 1 | Worksheet 1 (cont'd)



```
1 down()  
2 paint()  
3 left()  
4 paint()
```



```
1 paint()  
2 left()  
3 paint()  
4 down()  
5 paint()
```



```
1 paint()  
2 up()  
3 paint()  
4 up()  
5 paint()
```





Lesson 10 | Wrap up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

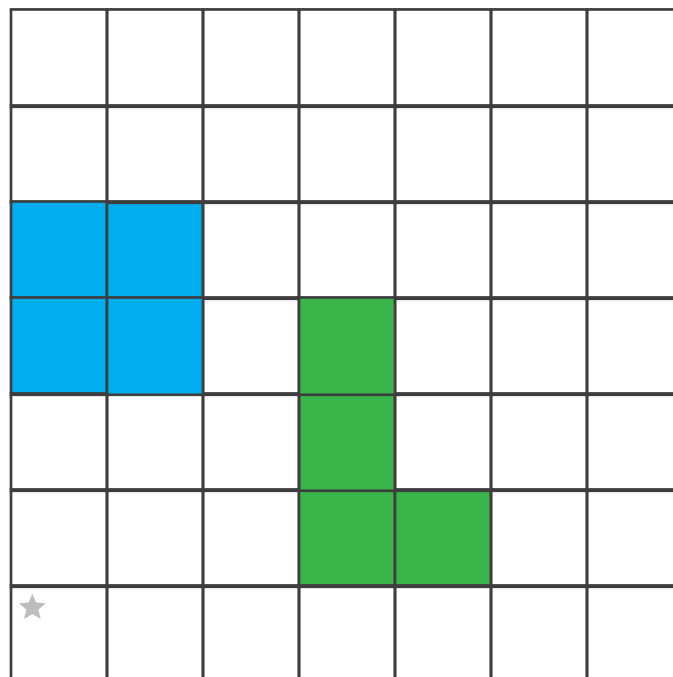
Code Elements

<code>up(steps)</code>	<code>down(steps)</code>
<code>left(steps)</code>	<code>right(steps)</code>
<code>paint(color)</code>	

Problems

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.

lines of code: 16





Lesson 11 | Worksheet

Emoji Design Thinking Handout

Empathize

I am creating an emoji for _____

List interests and likes of this person.

Emotions and feelings to convey in emoji.

Ideate

List your pixel emoji ideas.

Sketch your ideas.





Lesson 11 | Worksheet

Prototype #1



Decompose your emoji

What are the key features of your pixel emoji? (Example: face, face outline, mouth, eyes)
Circle features and write what the feature is and the color.





Lesson 11 | Worksheet

Prototype #2



Decompose your emoji

What are the key features of your pixel emoji? (Example: face, face outline, mouth, eyes)
Circle features and write what the feature is and the color.





Lesson 12 | Worksheet 1

Feature List

To Do List

Today's date _____

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____





Lesson 12 | Worksheet 1

To Do List Today's date _____

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____



{ } Lesson 2 | Warmup

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up() down()
left() right()
paint()

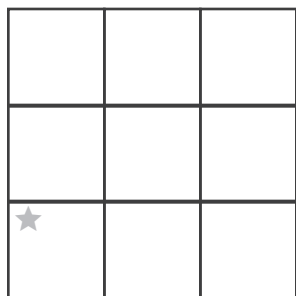
Example



```
1 right()  
2 paint()  
3 up()  
4 up()  
5 paint()
```

Problems

You are a pixel bot. Read the code and paint the picture.



```
1 up()  
2 right()  
3 paint()  
4 up()  
5 right()  
6 paint()  
7 down()  
8 down()  
9 paint()
```





Lesson 2 | Worksheet 1

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up() down()
left() right()
paint()

Problem

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	





Lesson 2 | Worksheet 2-1

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up()	down()
left()	right()
paint()	

Problem

You are a coder. Write code to command the pixel bot to paint the picture.





Lesson 2 | Worksheet 2-2

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up()	down()
left()	right()
paint()	

Problem

You are a coder. Write code to command the pixel bot to paint the picture.





Lesson 2 | Worksheet 2-3

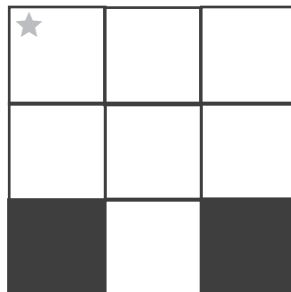
This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up()	down()
left()	right()
paint()	

Problem

You are a coder. Write code to command the pixel bot to paint the picture.





Lesson 3 | Warmup

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up() down()
left() right()
paint()

Problem

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	
7	
8	
9	
10	





Lesson 3 | Worksheet 1

This is a Pixel Bots exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up()
left()
paint()
down()
right()

Problem

You are a coder. Write code to command the pixel bot to paint the picture.





Lesson 3 | Worksheet 2

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

<code>up()</code>	<code>down()</code>
<code>left()</code>	<code>right()</code>
<code>paint()</code>	

Problem

You are a coder. Write code to command the pixel bot to paint the picture.





Lesson 3 | Worksheet 3

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up() down()
left() right()
paint()

Problem

You are a coder. Write code to command the pixel bot to paint the picture.





Lesson 3 | Worksheet 4

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

<code>up()</code>	<code>down()</code>
<code>left()</code>	<code>right()</code>
<code>paint()</code>	

Problem

You are a coder. Write code to command the pixel bot to paint the picture.





Lesson 3 | Worksheet 5

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up()	down()
left()	right()
paint()	

Problem

You are a coder. Write code to command the pixel bot to paint the picture.





Lesson 3 | Worksheet 6

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

<code>up()</code>	<code>down()</code>
<code>left()</code>	<code>right()</code>
<code>paint()</code>	

Problem

You are a coder. Write code to command the pixel bot to paint the picture.





Lesson 3 | Exit Ticket

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up() down()
left() right()
paint()

Problem

You are a coder. Write code to command the pixel bot to paint the picture.



1
2
3
4
5
6
7
8
9
10

11
12
13
14
15
16
17
18
19
20





Lesson 4 | Worksheet 1

This is an online Pixel Bots exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Problems

You are a coder. Write code to command the pixel bot to paint the pictures.



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



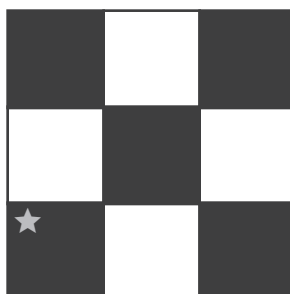
- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained





Lesson 4 | Exit Ticket

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up()
left()
paint()
down()
right()

Problem

You are a coder. Write code to command the pixel bot to paint the picture.



1
2
3
4
5
6

7
8
9
10
11
12



1
2
3
4
5
6

7
8
9
10
11
12





Lesson 5 | Warm-up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

up() down()
left() right()
paint()

Problems

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	
7	
8	
9	
10	





Lesson 5 | Exit Ticket

This is a Mouse Bot JavaScript exercise. In Mouse Bot we program the bot to eat the cheese.

Code Elements

faceUp() move()
faceRight() getCheese()

Problems

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	
7	
8	





Lesson 6 | Warm Up

This is a Mouse Bot JavaScript exercise. In Mouse Bot we program the bot to eat the cheese.

Code Elements

faceUp() move()
faceRight() getCheese()

Problems

You are a coder. Write code to command the pixel bot to paint the picture.



1	
2	
3	
4	
5	
6	
7	
8	
9	
10	





Lesson 7 | Warm-up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

<code>up()</code>	<code>down()</code>
<code>left()</code>	<code>right()</code>
<code>paint()</code>	

Problems

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.



{ } Lesson 7 | Worksheet 1



1) This is a drill. A drill creates holes by spinning a drill bit. How would you create a bigger hole with a drill bit? Bit creative.



2) This is a golfer. A golfer hits a golf ball with a golf club. How would the golfer hit the ball further? Be creative.



Lesson 7 | Worksheet 1 (cont'd)

Now try programming the drill to create 3 different size holes using one coding element.

Code Elements

`drill(size)`



1	
2	
3	
4	
5	
6	

Program the golfer to hit the ball 3 different distances.

Code Elements

`swing(club)`



1	
2	
3	
4	
5	
6	



Lesson 7 | Worksheet 1 (cont'd)

5) Now it's time to return to Pixel Bot. Can you come up with a way to paint the picture in 6 lines? Think about problems 3 and 4.



1	
2	
3	
4	
5	
6	

6) What are the similarities between drilling, golf, and moving the pixel bot multiple steps?



Lesson 7 | Worksheet 2

This is an online Pixel Bots exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Problems

You are a coder. Write code to command the pixel bot to paint the pictures.



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained





Lesson 8 | Warm-up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

`up(steps)`

`left(steps)`

`paint()`

`down(steps)`

`right(steps)`

Problems

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.





Lesson 8 | Worksheet 1

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

`up(steps)`

`down(steps)`

`left(steps)`

`right(steps)`

`paint()`

Problems

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.

lines of code: 27





Lesson 8 | Worksheet 2

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

<code>up(steps)</code>	<code>down(steps)</code>
<code>left(steps)</code>	<code>right(steps)</code>
<code>paint()</code>	

Problems

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.

lines of code: 31





Lesson 8 | Worksheet 3

This is an online Pixel Bots exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Problems

You are a coder. Write code to command the pixel bot to paint the pictures.

lines of code: 18



☐ done

☐ explained

lines of code: 15



☐ done

☐ explained

lines of code: 21



☐ done

☐ explained

lines of code: 17



☐ done

☐ explained





Lesson 9 | Warm-up

This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

Code Elements

`up(steps)`

`left(steps)`

`paint()`

`down(steps)`

`right(steps)`

Problems

You are a coder. On the code line paper, write code to command the pixel bot to paint the picture.

lines of code: 24





Coders & Bots

Coders



Navigator. You are responsible for the overall plan for the program. Guide the Writer and keep track of what your program is doing.



Writer. Add code to your program. Pay attention to syntax.

Bots



Stepper. Step through the program and read each step aloud. Keep your finger on the step you are reading.



Actor. Listen carefully to each line of code the Stepper says aloud. Using the materials available, show what each line of code does.



Coding Paper

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

11	
12	
13	
14	
15	
16	
17	
18	
19	
20	



Coding Paper

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	



Coding Paper

1		31		61	
2		32		62	
3		33		63	
4		34		64	
5		35		65	
6		36		66	
7		37		67	
8		38		68	
9		39		69	
10		40		70	
11		41		71	
12		42		72	
13		43		73	
14		44		74	
15		45		75	
16		46		76	
17		47		77	
18		48		78	
19		49		79	
20		50		80	
21		51		81	
22		52		82	
23		53		83	
24		54		84	
25		55		85	
26		56		86	
27		57		87	
28		58		88	
29		59		89	
30		60		90	



Small Pixel Grids





Medium Pixel Grids





Large Pixel Grids





Challenge Problems - 1





Challenge Problems - 2

