



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

Problem 1

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



```
up()  
paint()  
right()
```



```
up()  
right()  
paint()
```





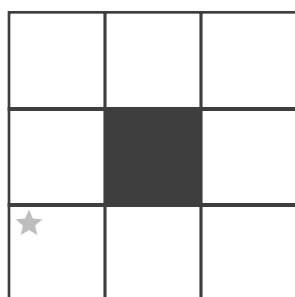
Lesson 1 | Worksheet 1

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()

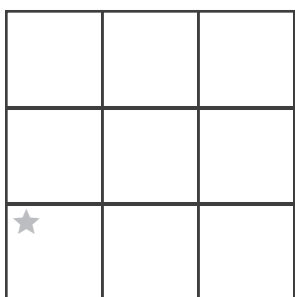
Example



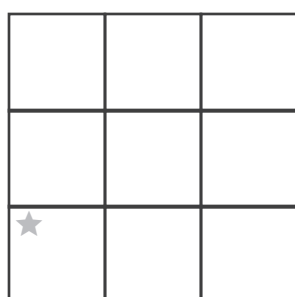
```
1 up()  
2 right()  
3 paint()
```

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()

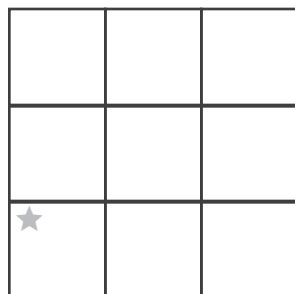
Example



```
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

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

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

<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 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()

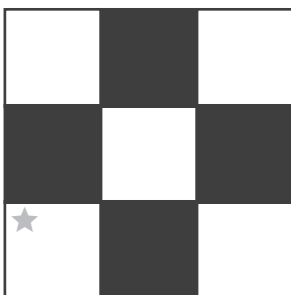
Problem

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)`

`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: 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	
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	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	

61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	



Small Pixel Grids





Medium Pixel Grids





Large Pixel Grids





Challenge Problems - 1





Challenge Problems - 2

