



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

`up(steps)`

`left(steps)`

`paint(color)`

`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: 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 _____

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



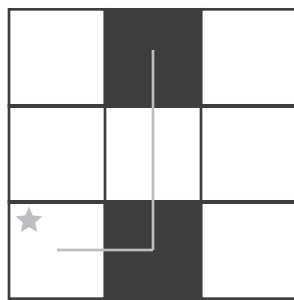
{ } Lesson 2 | Warmup

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()

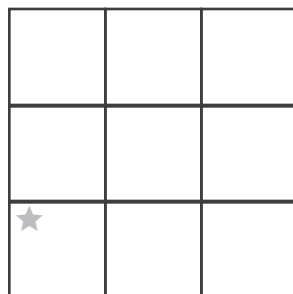
Example



```
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.



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Lesson 4 | Worksheet 1

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

Problems

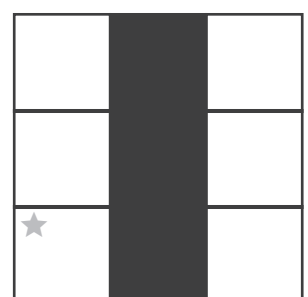
You are a coder. Write code to command the pixel bot to paint the pictures.



- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



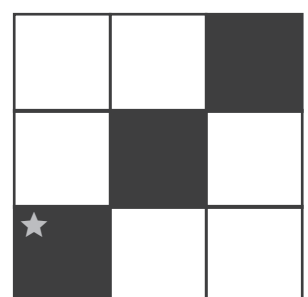
- ☐ done
- ☐ explained



- ☐ 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() down()
left() right()
paint()

Problem

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



1
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4
5
6

7
8
9
10
11
12



1
2
3
4
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6

7
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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.



| | |
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| 1 | |
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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.



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| 1 | |
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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)`

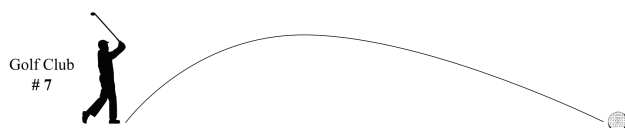


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| 6 | |

Program the golfer to hit the ball 3 different distances.

Code Elements

`swing(club)`



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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.



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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

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Coding Paper

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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

