



# Lesson 1 | Warmup

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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

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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

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

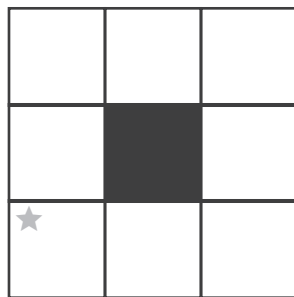
## Code Elements

---

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

## Example

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

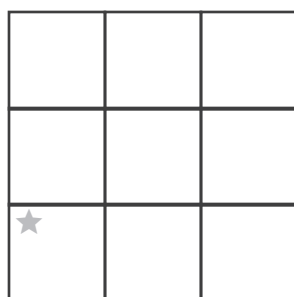
## Problems

---

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

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

## Problems

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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.

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Emotions and feelings to convey in emoji.

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### Ideate

List your pixel emoji ideas.

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Sketch your ideas.





# Lesson 11 | Worksheet

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## 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

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## Feature List

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## To Do List

Today's date \_\_\_\_\_

- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
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- ☐ \_\_\_\_\_
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- ☐ \_\_\_\_\_
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# Lesson 12 | Worksheet 1

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To Do List    Today's date \_\_\_\_\_

- ☐ \_\_\_\_\_
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- ☐ \_\_\_\_\_



# { } 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.



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# Lesson 2 | Worksheet 2-1

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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

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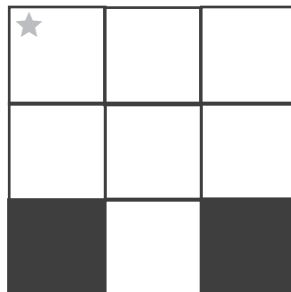
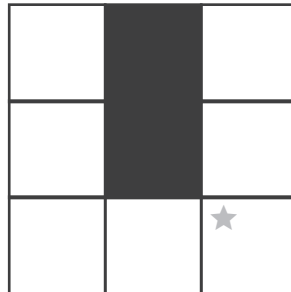
This is a Pixel Bots JavaScript exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

### 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.



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# Lesson 3 | Worksheet 1

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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

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

### Code Elements

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|                      |                      |
|----------------------|----------------------|
| <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

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

## Code Elements

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|                      |                      |
|----------------------|----------------------|
| <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

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

## Code Elements

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|         |         |
|---------|---------|
| 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

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

## Code Elements

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|                      |                      |
|----------------------|----------------------|
| <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

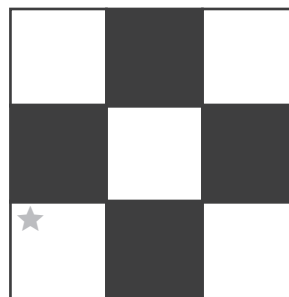
This is an online Pixel Bots exercise. In Pixel Bots we program bots to paint pictures using Code Elements.

## Problems

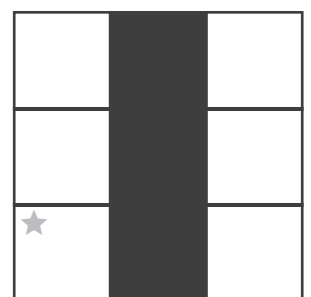
You are a coder. Write code to command the pixel bot to paint the pictures.



- ☐ done
- ☐ explained



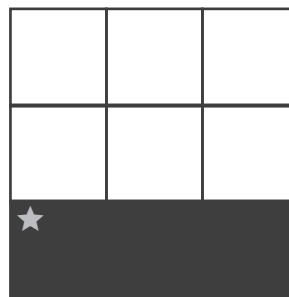
- ☐ done
- ☐ explained



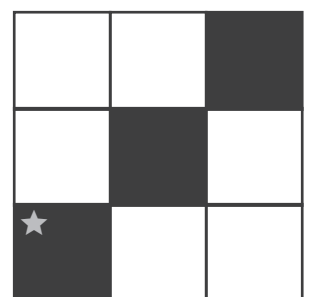
- ☐ done
- ☐ explained



- ☐ done
- ☐ explained



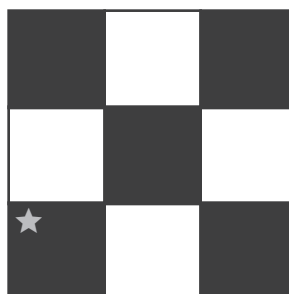
- ☐ done
- ☐ explained



- ☐ 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.



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# 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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| 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 |  |
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| 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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| 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

---

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

## 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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| 1 |  |
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| 6 |  |

Program the golfer to hit the ball 3 different distances.

## Code Elements

`swing(club)`



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| 1 |  |
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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.



|   |  |
|---|--|
| 1 |  |
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| 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

---

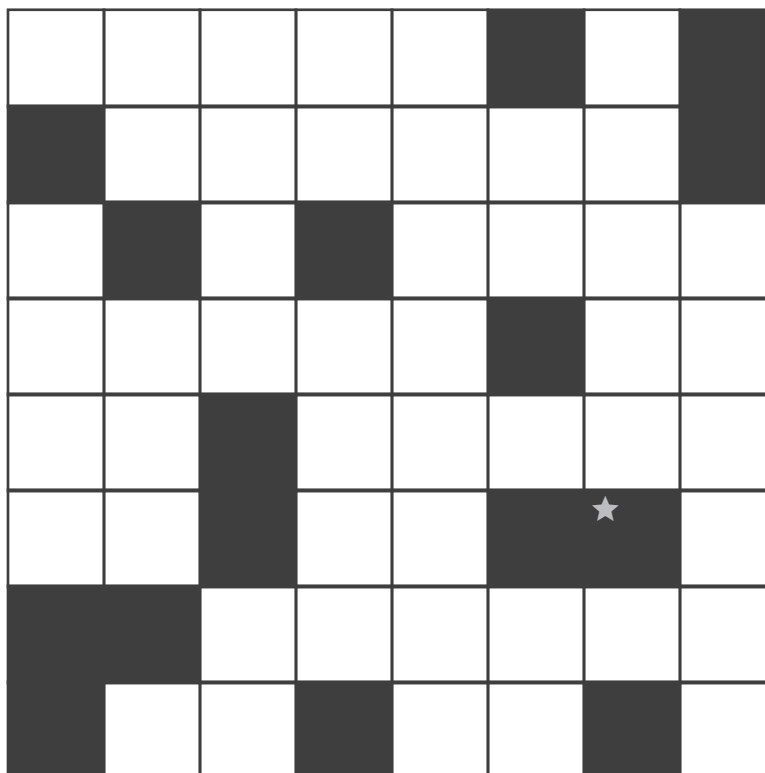
|                          |                           |
|--------------------------|---------------------------|
| <code>up(steps)</code>   | <code>down(steps)</code>  |
| <code>left(steps)</code> | <code>right(steps)</code> |
| <code>paint()</code>     |                           |

## 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)`

`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: 24





# Coders & Bots

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## Coders

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**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

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**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

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| 90 |  |



# Small Pixel Grids

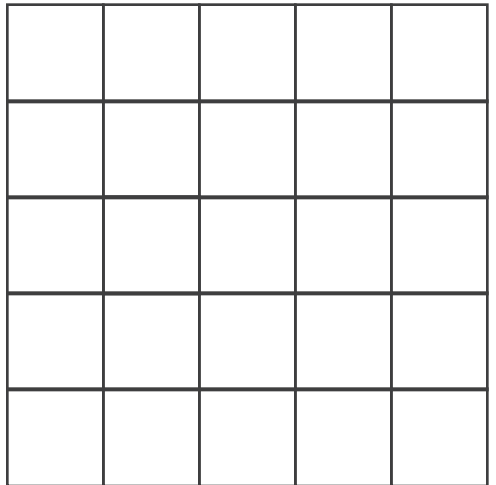
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# Medium Pixel Grids

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# Large Pixel Grids

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# Challenge Problems - 1

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## Challenge Problems - 2

