Badge 2: Digital Game Design

Did you ever wonder how your favorite video game was created? Learn how people create new games—and find out how games can also help people to learn new skills and experience new things.

Steps

1. Discover how game design can be used "for good"
2. Explore tools used to develop digital games
3. Plan a maze game
4. Build, test, and improve your maze game using iteration
5. Share your game with others

Purpose

When I've earned this badge, I'll know how to think like a game maker. I'll know how to use iteration to plan, build, and test my game.

1 Discover how game design can be used "for good"

A game about living in the desert can teach people how to save water. Playing another game can give rice to hungry people. Video games aren't always just for fun—they can make a real difference. What kind of problem would you like to solve with a video game?

WATER LITERS SAVED: 20
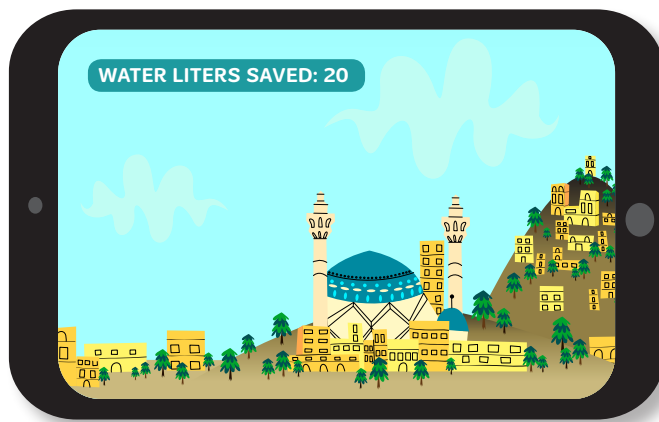
2 Explore tools used to develop digital games

Computers follow commands that programmers write for them. Those commands are called algorithms.

When you make a digital game, you create algorithms that tell the game's characters what to do. An algorithm will tell the game characters how to move. Another algorithm might give the character choices.

Sequence, loops, and events are all important parts of the computer programs that make video games.

Words to Know

Digital games
These are games you can play on your phone, computer, TV, tablet, or digital gaming machine. They're also called video games.
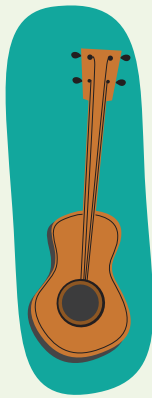
Iteration
This is when you do something many times to make it better. Think about drawing a picture of a flower. You may draw it once, then decide to add leaves. So, you draw it again with leaves. Each time you draw the flower, you'll make it a little better.

3 Plan a maze game

Big ideas need big plans. Imagine you were going to design a new Brownie uniform.

▶ First, you'd ask other Brownies what they'd like the new uniform to be like. Do they want pockets? Do they like buttons or zippers better?

▶ Then, you'd imagine what the uniform would look like.

▶ Next, you'd make sketches of your uniform design.

▶ You'd show the sketches to some Brownies and ask for feedback.

▶ Then, you'd make more sketches to improve your design.

▶ When you've finished improving your sketches, you'd make a uniform out of fabric.

▶ You'd share your new uniform with the other Brownies and ask for feedback.

You just went through the design process by following these steps: Ask, Imagine, Create, Improve, Share.

You can also use this process to make a good video game.

## THE DESIGN PROCESS

Ask
↓
Imagine
↓
Create
↓
Improve
↓
Share

4 Build, test, and improve your maze game using iteration

As game makers develop new games, they play them throughout the design process to see how they work. This is called **playtesting**.

Playtesting shows game designers where they can make the game better. Every time they test and improve their game, they use **iteration**. Iteration is when you repeat a process many times. When you practice a song on the piano and correct your mistakes each time you play it, that's iteration.

When you create a great video game by testing and improving it, you're using iterative game design.

Level 4
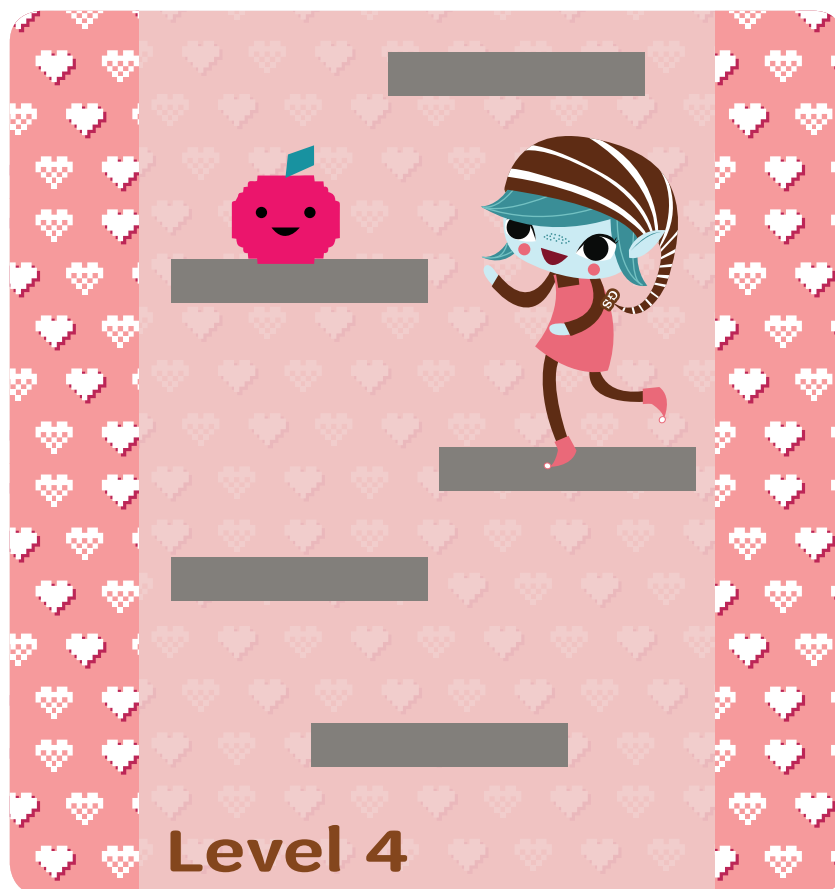
Play like a Computer

Think about your favorite game. How do you play it?

The rules for how you play the game is an **algorithm**. For example, how do you take a turn? Do you roll the dice or spin a spinner to move your game piece?

The order you do the steps is the **sequence**: First, you roll the dice. Then, you move your piece that number of spaces.

If you take turns with other players, that's a **loop**.

Can you figure out an algorithm, sequence, and loop for your favorite game?

5 Share your game with others

How can you find out if your game works? Ask a friend to play it!

Computer scientists and game makers show their work to other people to get feedback. You can help other programmers by playing their games and seeing what works and what doesn't. Plus, playtesting other people's games might give you ideas about how to make your game better.

The best part about sharing your game with others is that it's FUN!
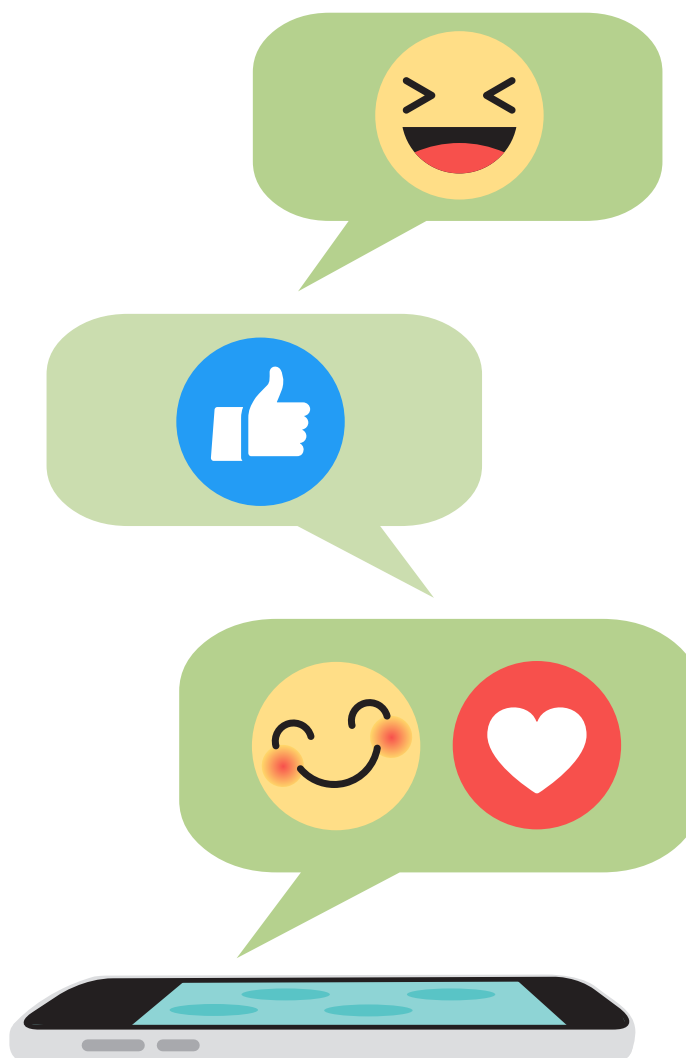
**Now that I've earned this badge,
I can give service by:**

- Telling other people about games they can play to help charities or science.

- Teaching others about the design process game designers use to make video games.

- Using iteration to make something better.

I'm inspired to: