Badge 2:
Digital Game Design

Most days, simple choices, like which shoes you wear, might not matter, but sometimes a simple choice can have a big impact. What if you wore sandals and there was an unexpected snow storm? What if you forgot your cleats and had a big soccer game?

When designers create video games, they develop every possible decision and consequence. Game makers build in choices to make a game fun and challenging.

Steps

1. **Brainstorm your game "for good" scenario**
2. **Create a character for your game**
3. **Learn about decision trees in game design**
4. **Design your game**
5. **Playtest and iterate your game**

Purpose

When I've earned this badge, I'll know about narrative game design, how to create the elements and mechanics of a game, and how games can make a positive change in the world.

1 Brainstorm your game "for good" scenario

What if playing a game could change the world? What if you could help scientists understand the brain or feed hungry people by playing a video game? You can!

Digital game designers try to create games that are fun, but they can also design games that have a positive impact. Games can teach new skills, raise awareness about important issues, or help scientists do research.

An important part of making a great game is creating a good scenario. The **scenario** in a game is the set up: the environment, the sequence of events, and the main challenges the characters face.

What issues are important to you? What kind of game could you design to create positive action for your cause? How would the scenario you create affect your game?

WORDS TO KNOW

Avatar an electronic image that represents a person or character. Avatars can be manipulated by a computer user, like the player of a video game.

Condition a type of statement or test which will result in the condition being either true or false. It's used in the 'decision-making' part of an IF-ELSE statement.

Consequence in decision trees, a consequence refers to the result of a decision that has been made.

Decision tree a tool often used to design video games. It has a flowchart, or tree structure, that helps game developers design the structure and logic of the player's choices and consequences.

Game mechanics the instructions given to the computer on how the game is played. They're specific to the type of game: for example, in chess, all the moves relate to the game pieces. In video games, the rules of the world created by the game's designers are game mechanics. This can include how avatars move and how players beat a level.

IF-ELSE statement tests whether a condition is true and then runs one piece of code if the condition is true, or another if it is false. They're used by computers to make decisions.

Narrative the story in a video game. It can have many different paths that are created by players making choices and facing consequences.

Node one element of a decision tree. This is the part of the decision tree where the question lives. The first node of the decision tree is called the **root node**. The nodes that come after the decisions are called **child nodes**. Nodes that don't have children are called **leaves** or **leaf nodes** (like with real trees, the leaves are at the end of the branches). In decision trees for game design, leaf nodes represent the end of one possible game. Trees can have multiple levels of child nodes and many leaves.

Playtest playing a newly developed game to test it for flaws and to identify possible improvements.

Scenario the details of a situation, including settings and sequences of events for a game, scene, or plot. It's part of the setup in many types of games.

2 Create a character for your game

What's the first thing you notice about a video game character? Probably how she looks. Her look is important—it can tell you a lot about her. What she wears and how she moves are part of her look, and they can convey information about her life. Is she athletic? Does she have a job that requires her to wear a uniform?

There's more to a great video game character than just her look, though. How she interacts with other characters and the choices she makes tell a lot, too. Is she a leader or a follower? Does she take risks? How does she treat people? How does she solve problems?

When programmers write code to create characters in a video game, they need to write graphics algorithms for her look. They also need to write algorithms that present the challenges she'll face, the choices she can make, and the consequences of her choices. As users play the game, they'll learn about a character by seeing what kinds of choices they make.

How do people get to know you in the real world? Do they make assumptions about you based on your looks? What does how you interact with other people or the choices you make tell people about you?

STEP 3
Learn about decision trees in game design

Video games can have an open-ended story that lets players choose what they want to happen. Game makers use decision trees, which are like flowcharts, to create choices and consequences for characters.

Some decision trees offer just two choices for each situation. Some offer a lot more, but the more choices in the decision tree, the more code the programmer has to write. The only limits are really the designer's imagination and the time the team has to write the code.

Think about a decision tree like a hike in the woods:

- **As you're walking along the trail, you come to an intersection. You have two trails to choose from.**

- **You choose the one on the left, and so you continue down that path.**

- **The next time you have to choose which way to go, you have three choices: left, center, or right.**

- **You choose center and keep walking.**

- **Every time you make a choice, you are sent down a specific path. Being on that path has certain consequences. Is the trail steep or rocky? Is the trail leading you in the direction you want to go? Did that trail get washed out in a big storm?**

Decision trees work the same way. As the game designer, you get to think up all the choices and the consequences in your game. Then, you write the code for it. The more choices you want your players to have, the more code you write.
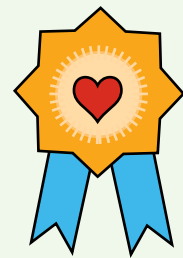
STEP 4
Design your game

Scenarios, characters, and decision trees are the key ingredients in your video game. Game makers use scenarios and what they know about their characters to create the decision trees. These decision trees, with choices and consequences, will direct their player's experience.

You may find, as you're combining your scenario, characters, and choices and consequences, that you want to make changes. You may be inspired to offer some different options in your decision trees, give your characters a new skill or personality trait, or tweak the environment in your scenario. That's great! Many times, your best idea isn't your first or even second idea. Making a game is an like an open-ended story. Make creative choices!

Need to Learn a New Job Skill? Game ON!

When components of video games are applied to non-game situations, it's called **gamification**. In the world of medicine, gamification is changing the way professionals are trained and how patients experience their treatment.

For example, surgeons and nurses can use computer simulations of surgery or other medical situations to practice and improve their skills. For patients, programs are designed with a game-like "goal-action-reward." These games help motivate and guide patients through their treatment or rehabilitation.
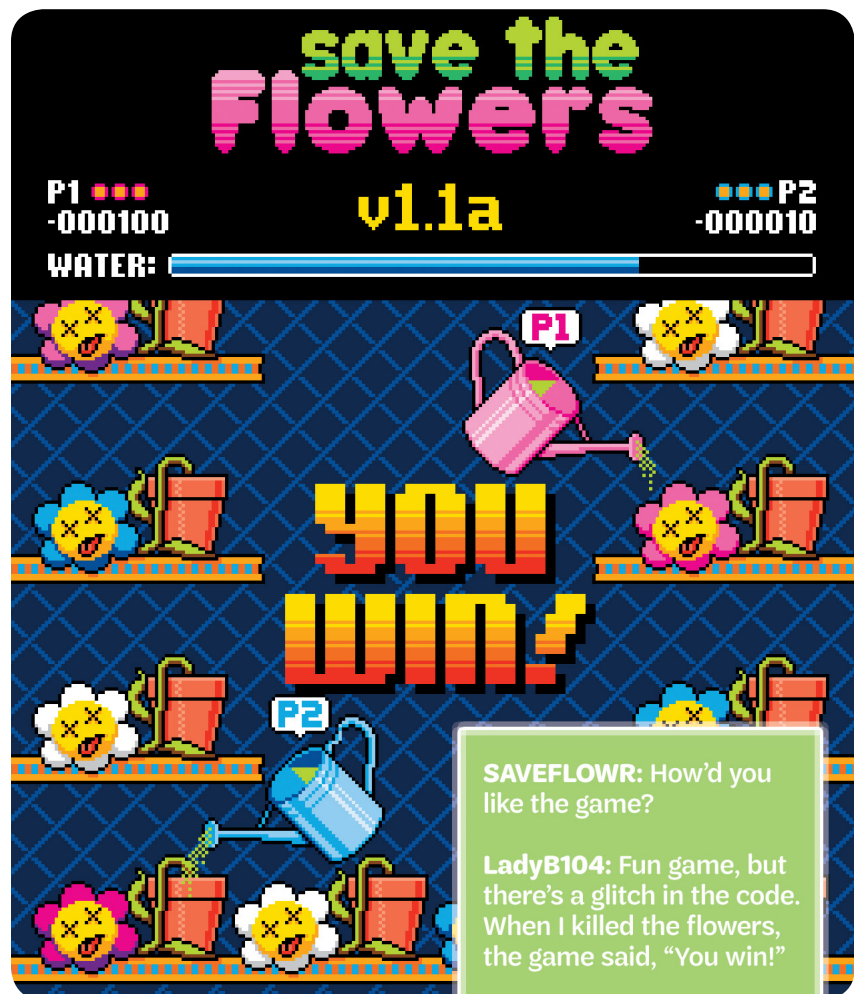
Playtest and iterate your game

So you designed a video game, but how do you know if it works?
Once game makers have created a game, they **playtest** it. That means they have someone play the game to see if the scenario makes sense, the characters are fleshed-out enough, and the decision trees work as the maker intended.

Game designers may get all different kinds of feedback that they use to improve their games. For instance, testers could feel like the choices didn't make sense for the characters or the challenges were in the wrong order. Getting someone else's perspective on your design is important. You have an image in your mind of what the game could be like, but building what you've imagined in code is hard.

Playtesting your game lets you know if you've been successful or if you need to make changes. Each time you make changes to improve your game, you create an **iteration**, or improved version. Iteration is a crucial part of good game design.

SAVEFLOWR: How'd you like the game?

LadyB104: Fun game, but there's a glitch in the code. When I killed the flowers, the game said, "You win!"

Now that I've earned this badge, I can give service by:

- Inviting other people to play my game and explaining how decision trees work in game design.

- Hosting a Bring-Your-Own-Device (BYOD) game night, where kids can come together and play video games.

- Creating a video game review blog to highlight games that make a positive impact on the world.

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I'm inspired to: