girl scouts of central indiana

Brownie – Coding Basics

Material list:

Step 1:

- **Campfire Safety Maze** pdf
- Paper
- Pen/pencil

Step 2:

- **You Can Be a Game Designer** pdf
- Paper or index cards
- Something to write with – a pen, pencil, crayons or markers

Step 3 & 4:

- In these steps you will build a 3D version of your own maze game to test. The supplies you'll need depends on your design. It could be as simple as just using pencil and paper, blocks, or you could use something bigger. Search your house and let your imagination go! Just remember if you are using something that belongs to another person in your family, get permission first.
    - Consider taking it outside and use sidewalk chalk or items you find in nature to create your maze.

Digital games are definitely fun to play, and game designers often think about how to make a game fun when they're designing it. However, they also want to know if it's possible to teach players a new skill or practice one they already know. Could they help a player travel and learn about a place they otherwise wouldn't normally get to visit? As you earn this badge, you're going to design your own maze game, where you decide the goal of the game.

Step 1: Discover how game design can be used for good

Often, we want to be entertained when we play video games, and they certainly can be fun. But, did you know video games can be for more than just entertainment? Games can teach us new things and even help us see things we may never experience. We can find out about places, people, and situations we might not otherwise know about!

Here are some examples of games for good:

- **Games that were created for a cause:** Games can help share an idea that helps others and the world.
- **Games that help us learn:** Games can make learning even more fun!
- **Games that help our health:** Some games can help us be healthier. These games may encourage players to get out and walk around their neighborhood to

interact with different characters in the game. Or they track your activity and allow you to compete with friends and family.

Think about the different digital games you play. These could either be on a phone, tablet, computer, or gaming console. Do any of the games you play fit into one of the games for good listed above? Are you inspired to help other people when you play these games? What kind of game would you create to teach someone a new skill?

Step 2: Explore tools used to develop digital games

Think about your favorite game, it could be a board game or a video game. What makes it fun? Does the game teach you a new skill or let you practice one you already know? In this badge you are going to get to create your own maze game. Let's start by taking a closer look at a maze game and see if we can figure out some of the important things a game designer needs to think about even before they start writing the code for a digital game.

For this activity, use the Campfire Safety Maze to start to look at a maze game like a game designer.

Step 3: Plan a maze game

When game designers start working on a new game, they can't just jump into building the game. They start by brainstorming and making a plan for what they'd like the game to look like. In the next steps you will build and test your own 3D maze game. But before you start building, it's important for you to brainstorm some ideas for your game. Use the You Can Be a Game Designer to begin making your plans.

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

Now it's time to start building a 3D version of your maze. Gather supplies from around the house to create a grid on the floor or outside on the ground.

Anytime you create something new it usually involves lots of trial and error. You may find that some of the ideas you had on paper just won't work when you try to build your 3D version, or you may have a brand-new idea.

Once you've got your maze built, it's time to also create the algorithm for your character to follow. It's important to try out your algorithm to make sure your character will reach the goal. Was it too easy or too hard to find the right algorithm to make it through your maze? Take a second look at your design, do you need to go back to the drawing board and make changes? If you do that, it's okay, it's all part of the design process. In fact, anytime game designers repeat a step in the design process it is call an **iteration**.

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Can you make iterations to make the game harder, easier, or more fun? Follow your imaginations to see what you can create.

Step 5: Share your game with others

The best part about creating a game is sharing it with other people. Share your finished game with your family or with a friend. Ask them for feedback or what their thoughts are on the game. Are there things they would like to see added or changed in the game?

Game designers also often get feedback from players on their games. They use this information to look for ways to improve the game. Once game designers have improvements, they will release a new version or upgrade. Now that you've share your game with others, are there any upgrades you'd like to make to your game?

Now that you've earned this badge, you could give service by:

- Share with others how games can help charities or science.
- Teach others about the game design process.
- Encourage to make something better by using iteration.

What are you inspired to do with your new knowledge?