Name: _____ Date: _____

One Person or Two Thousand

Reading level 8 (4th grade) · 720 words

You press a button, and a character jumps. It feels like nothing. But someone decided how high the jump goes. Someone drew the hero. And a computer works out the jump again and again, many times each second. So who makes a video game? Sometimes it is one person. Sometimes it is about two thousand.

Start with one. Eric Barone made a farming game called Stardew Valley. For more than four years he worked on it alone. He taught himself how to make the music, the art, the code and the design. He said he worked at least eight hours a day, and took a day off only when he could not avoid it.

That was a lot of jobs for one pair of hands. A bigger team splits them up. A designer shapes the ideas behind the game. An artist makes the pictures. A programmer writes the code, the steps that make everything run. Designers, artists and programmers usually each have a lead.

Two more jobs matter just as much. A sound engineer looks after the sound effects. This includes where each sound seems to come from. A tester plays the game to find mistakes. A mistake in a game is called a bug. Testers write down what went wrong, and how to make it go wrong again.

Under all these jobs, even in Barone's farming game, a loop is running. Each turn, the game takes in what you pressed. Then it moves everything one small step. Then it draws the new picture. Then it starts over. A programmer who wrote a book about this says almost every game has a loop like it.

One turn of the loop is called a frame. Frames per second tells you how many turns fit in one second. Many screens redraw the picture sixty times a second. When that number is high, a game moves smoothly. When it is low, the picture looks choppy, like a flip book with pages missing.

What does the loop draw? In many games, a sprite is a flat picture placed over a larger scene. In a 3D game, a hero is a model. Its surface is built from many tiny flat faces. That surface is called a mesh. Either way, an artist makes it, and the loop draws it again on every frame.

Even famous games have bugs. Pac-Man is an arcade game from 1980. A few very skilled players got all the way to level 256. There, the right half of the screen turned into a jumble of letters, numbers and symbols. The level could not be finished. It was a surprise to the players who found it.

Why did it break? The game keeps its count in a space that holds only 0 to 255. At level 256,

the code that draws the bonus symbols added one. The count rolled over to zero. That code then ran too long. It drew from the wrong part of the computer's memory. A tester must find a problem like this, and the steps that cause it.

Now the other end. Rob Nelson was a producer of Red Dead Redemption 2. He said that roughly two thousand people at Rockstar worked on it. A record book lists that number, which came from the studio. It is a round number, not a count anyone outside can check. Even so, it is a very long way from one person at a desk.

In between are teams of every size. Supergiant Games made a game called Hades. In 2020, its director said the team was just under twenty people. He said a team is not better just because it is small. But being small has some advantages. Talking is simpler. Decisions spread across the team faster.

How do you become someone who makes games? Barone says he began at school, while he studied computer science. He made really small, simple games and worked his way up. Stardew Valley came out in February 2016. Within two months it had sold a million copies.

So when a hero jumps because you pressed a button, a lot has already happened. The loop took in your press. A programmer's code moved the hero. An artist's picture was drawn, and a sound played. And long before you got the game, a tester tried to break it.

Questions

1. How long did Eric Barone work on Stardew Valley, mostly on his own, before it came out?

A. More than four years
B. About four months
C. About fourteen years

2. What does a tester do?

A. Draws the characters
B. Plays the game to find mistakes
C. Writes the music

3. Why did Pac-Man's level 256 break?

A. The player pressed the wrong button
B. The artist ran out of colors
C. A count rolled over to zero in a space that holds only 0 to 255

4. What does the word "bug" mean in this book?

A. A small insect
B. A mistake in a game
C. A kind of sprite

5. What happens on each turn of the game loop?

A. It draws the picture, then it quits

B. It plays a sound and nothing else

C. It takes in what you pressed, moves things one step, and draws the picture

Words to know

sprite: flat picture

mesh: 3D surface

tester: bug finder

bug: game mistake

loop: repeating cycle

Answer key: One Person or Two Thousand

1. A. More than four years
2. B. Plays the game to find mistakes
3. C. A count rolled over to zero in a space that holds only 0 to 255
4. B. A mistake in a game
5. C. It takes in what you pressed, moves things one step, and draws the picture