Museum of Science.

EiE | Families and STEM Events

Computer Science at Home:
A Story to Remember
Activity Book

FOR AGES 4+

Try computer science as a family!

Nur, Fitri, and Fakhri have a problem. They are trying to tell a story with their grandparents. Nur, thinking like a computer scientist, uses her knowledge of sequences to help them solve their problem. **Computer scientists are people who figure out ways for computers to solve problems.** Try this activity as a family and you'll be thinking like computer scientists too!

A Story to Remember challenges you to think about how the order of events matters in a story. What should happen at the beginning of the story? How should the story end? Here's what you'll need to get started:

- **Materials** – You'll need a pair of scissors. You may also want index cards and tools to write with.

- **Testing Station** – You'll need space to build your story sequence, such as a table or the floor.

- **Your Favorite Story** – Before starting this activity, think about one of your favorite stories to get ideas. What is the first thing that happens in the story? What happens next? Could the order of these parts be switched?

Computer scientists use a variety of tools, including sequences, when they design solutions to problems. A **sequence** is a set of steps completed in a specific order. This activity supports an understanding of computer programming, logic, and creativity. It's also a fun way to connect as a family!

While a sequence in a story is not the same as a sequence in a computer program, you can use similar skills to understand how the order of steps can change the result. Just as a story is told from beginning to end, a computer follows steps in the order they are given.

Children as young as four can participate, though they may need a bit more support. Older children can use their imaginations to create more complex solutions. You can read this activity book with your child, or, if they're ready, let them read it to you!

For more computer science and engineering resources, visit www.families.eie.org.
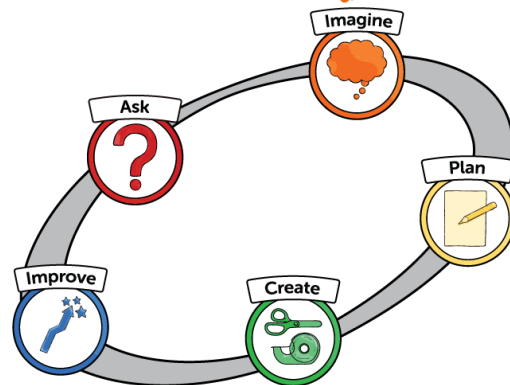
Turn the page to help Nur, Fitri, and Fakhri make a sequence for their story!

Computer scientists are people who use computers to solve problems.

First, they **ask** questions about the problem . . .

Then, they **imagine** possible solutions. One of the tools they can use to solve a problem is a sequence.

DREAM
GIANT

Imagine

Ask

?

Plan

Improve

Create

Next, computer scientists make a **plan**.

Then they **create** and **test** their solutions. When they run into problems, they **improve** them to make them better!

We can work together. Let's start by asking questions.

Let's think like computer scientists! We'll follow the steps to create a story based on a sequence of events.

4

Hmm . . . Here are the parts we want in our story. Let's ask questions about each part.

Do you think it's a nice giant or a mean giant?

Giant

The woman wants a baby.

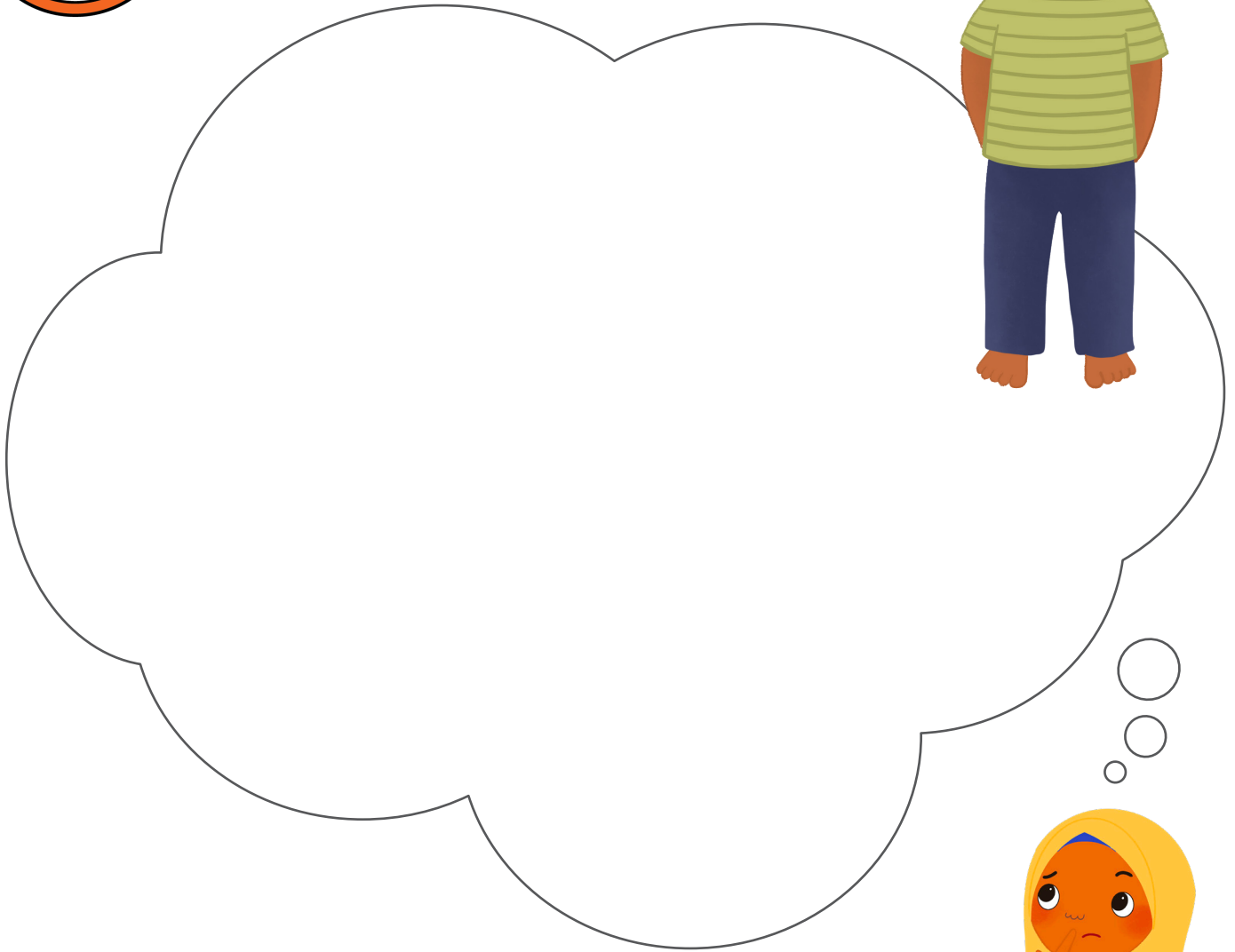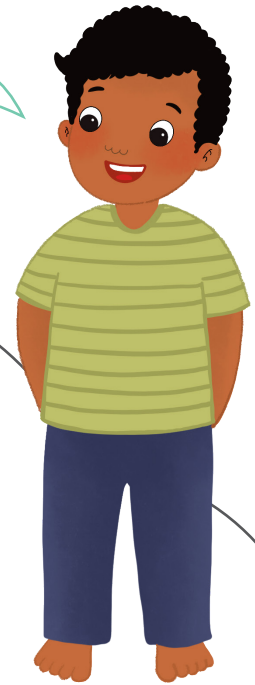Magic bags

Goes into the forest

The End

Baby

Cut out the pieces above, or make your own cards. Ask and answer questions about each piece to add details.

○ **Take a break...**

or start imagining! ➔

Imagine

Imagine all of the different stories we could tell with these pieces. What order do we want to try first?

Different sequences give us different stories. That's just like computer science! Changing the order of steps in a program can change how it works.

Will your story have a sad, happy, funny, or scary ending?

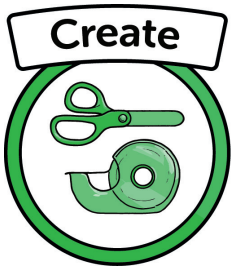**Rearrange the pieces to try different ideas.**

Plan

Choose one sequence for your story. Draw pictures or write it here.

We're almost ready to tell our story, but first we need a **plan**.

Computer scientists like to plan their steps out before they start writing a program.

○ **Take a break...**

or create and test your idea! →

Create

It's time to share our story!

I will tell it!

I wonder if it's going to make sense.

Tell the story you created or act it out as a group.

Did the story make sense? How did it make you feel? What can be improved?

Improve

Computer scientists LOVE to improve! When they find and fix errors in a program, it's called **debugging**!

I like thinking about how I can change the sequence of the story to make it end differently.

How can you make your story even better?

Talk about it together. You could change the order or add new parts to the story.

Then tell or act out your story again.

It can take many tries to find a sequence that works. We've got to keep at it!

Congratulations!

Now you know that different sequences can lead to different results! You are thinking like a computer scientist.

Computer science activities like *A Story to Remember* are a great way to practice thinking like a computer scientist. They're also a lot of fun! Computer scientists use sequencing to give very specific instructions to a computer. If the order of the instructions isn't right the computer program might give different results, just like a different sequence of events can create a different story. Like writers, computer programmers may have to try several times before they get the result they want. Here are a few ways that you can extend the activity and continue the fun as a family.

1. **Do you want to read an Indonesian folktale that also has a giant and magic bags?** Use the internet to search for the story of Timun Mas. How similar are the sequences in this story and your story?

2. **Do you like to tell stories?** You can write a story about your own life, an autobiography. Start by writing down your favorite memories on cards. You can even ask your family members to share their memories about you from when you were younger. Then, make a sequence by putting the cards in order.

3. **Do you want to use a computer program to make a story?** Ask an adult to help you make a story sequence with an app such as Alice or ScratchJr. What happens when you reorder the blocks in your program? Does it make sense? Sometimes silly stories can be the most fun to create. How many different ways can you sequence your story using the program?

4. **Do you want to think like a computer programmer?** Work with one other person in your family. Without showing your partner, draw a picture using simple shapes like circles and triangles. Then, give your partner specific instructions to draw the picture. Your partner should follow your instructions exactly. How did the copy turn out? How could you make it better?

5. **Do you like solving problems?** Think about a new problem that you can solve by using sequences.

   - What's the problem?
   - How could making a sequence solve the problem?
   - What steps will you need to follow?
   - How will you test your sequence?

Keep doing computer science together!

Visit www.families.eie.org for more free computer science and engineering activities from the Museum of Science, Boston.

Families: Share your designs with us!
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Comic and illustrations by Debby Rahmalia, Indonesia

We can use a computer to animate our story!

Next, we can share it with friends and family!