



FAMILY ACTIVITY

Digital Convergence

When you went online to access **G4T Connect**, you were using technology. But what is **technology** anyway?

Take a look at the images below. Which of them are technology?



Good news! There are no wrong choices, they are all **technology**! The technologies above help us listen to music, take photos or make payments. But technology is always changing.

Look at the photos again. Now use the chart below to place them in order from the oldest to the newest, or the least technologically advanced to the most technologically advanced.

Technology:

the use of science to invent useful things or solve problems

★ And here's a clue! You will need to use one item three times!

Technology	Least Advanced → ____ → ____ → Most Advanced
For listening to music	
For making a payment	
For taking photos	

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FAMILY ACTIVITY (Continued)



How did you do?

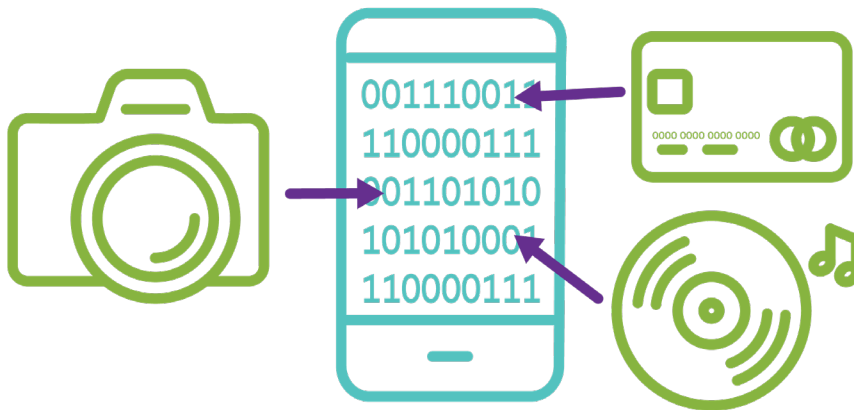
Technology	Least Advanced → ____ → ____ → Most Advanced
For listening to music	record → cassette tape → CD → smart phone
For making a payment	tripod → 35 mm camera → digital camera → smart phone
For taking photos	cash → check → credit card → smart phone!

So why did these changes happen? The word is **innovation**. Innovations can make technology work better, faster or just more easily.

But wait a minute. Why did you list the smart phone three times? Because the smart phone helps us listen to music, take photos and make payments. In fact, it can do even more than that.

Innovation:

a new idea, process or device that brings value to people's lives.



Innovations make it possible for all of these functions to **converge**, or come together, in one digital device. We call this **digital convergence**.

How many different things can you do with a smart phone? List them here:

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Binary Code

But how do so many technologies fit inside one device? Phones, tablets and computers all speak the same **digital language**. This language lets them translate all kinds of signals—voice, video, music, text—into digits or numbers. This language can be sent to other devices that reassemble the digits into the original signal.

This digital language is called **binary code**. Binary means involving two things. Binary code uses two numbers—0 and 1. At the most basic level, a computer sees everything as an electrical signal that is either **off** or **on**—**0** or **1**.

Now try putting your own name into Binary Code!

```
01001110101000100
01111010000110101
1100100101000101
1111010101011010
0111010100010001
11101000011010111
00100101000101111
1010101011010100
11101010001000100
```

Binary Code		
A 01000001	J 01001010	S 01010011
B 01000010	K 01001011	T 01010100
C 01000011	L 01001100	U 01010101
D 01000100	M 01001101	V 01010110
E 01000101	N 01001110	W 01010111
F 01000110	O 01001111	X 01011000
G 01000111	P 01010000	Y 01011001
H 01001000	Q 01010001	Z 01011010
I 01001001	R 01010010	

Hello, my name is:



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Biometrics

Digital technology lets you do all kinds of things on your phone, including pay for things. But it's important that only you are able to do that. There needs to be a way to **authenticate** you—to make sure that you are YOU!

What are some things about you that are unique to only you? Write or draw them here.

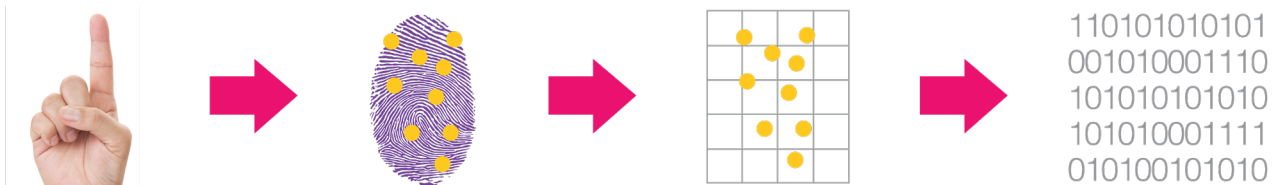
Authenticate:

to prove something to be true or genuine, to verify a user's identity.

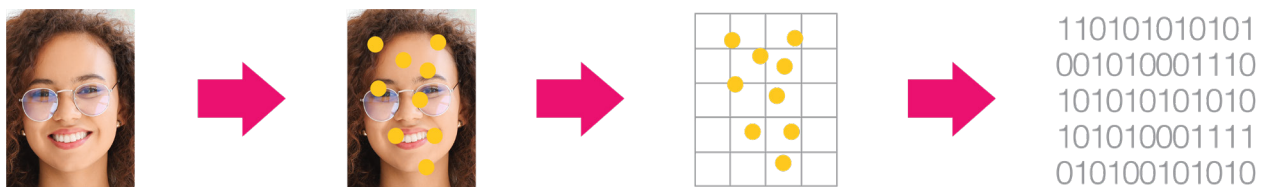
Biometrics:

the measurement of unique characteristics, especially to identify personal identity.

If you said, your fingerprint, you are correct! This is called **biometrics**. The fingerprint becomes a set of data points. These get digitized into binary code, which translates into a kind of password.



The measurements of your face—a selfie—can also be used.



Information unique to you is digitized and used to **authenticate** that you are you!
What digital technologies will you innovate in the future?

You are a Girls4Tech Design Engineer!



Certificate of Achievement

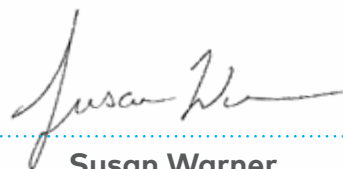
Congratulations

For being a certified

girls4tech 
C H A M P I O N



Michael Miebach
CEO, Mastercard



Susan Warner
Founder, Girls4Tech