Let's start with a short quiz. These women have worked in computing and there's a clue about what each woman did. Can you name these women?

Go to this form and answer these questions.   https://forms.office.com/e/A72kNwVQ28
Correct 6 answers will receive a house star and a sweet from room Z6 – Mrs Austin ☺

Pioneered the use of computers for space missions.

Taught computers to understand human language.

Started a well known online travel company.

The world's first computer programmer.

Invented techniques that are used in Bluetooth today.

Responsible for designing data systems for NASA as well as the illusion transmitter - an early form of 3D image technology.

Women in Computing

"*Computing is too important to be left to men. I think women bring a different perspective to computing; they are more thoughtful and less inclined to go straight for technical fixes.*"

Karen Spärck Jones

Source: cl.cam.ac.uk

A woman's perspective?

- Do you think that women bring a different perspective to their work?
- If so, what are the differences between men and women?
- What sort of women do you think work in computing?

Sparrow Lessons

Women in computing: early pioneers

- From the invention of the very first computers, women have played important roles in the development of computing and online businesses.
- We are going to learn about some of the early pioneers.
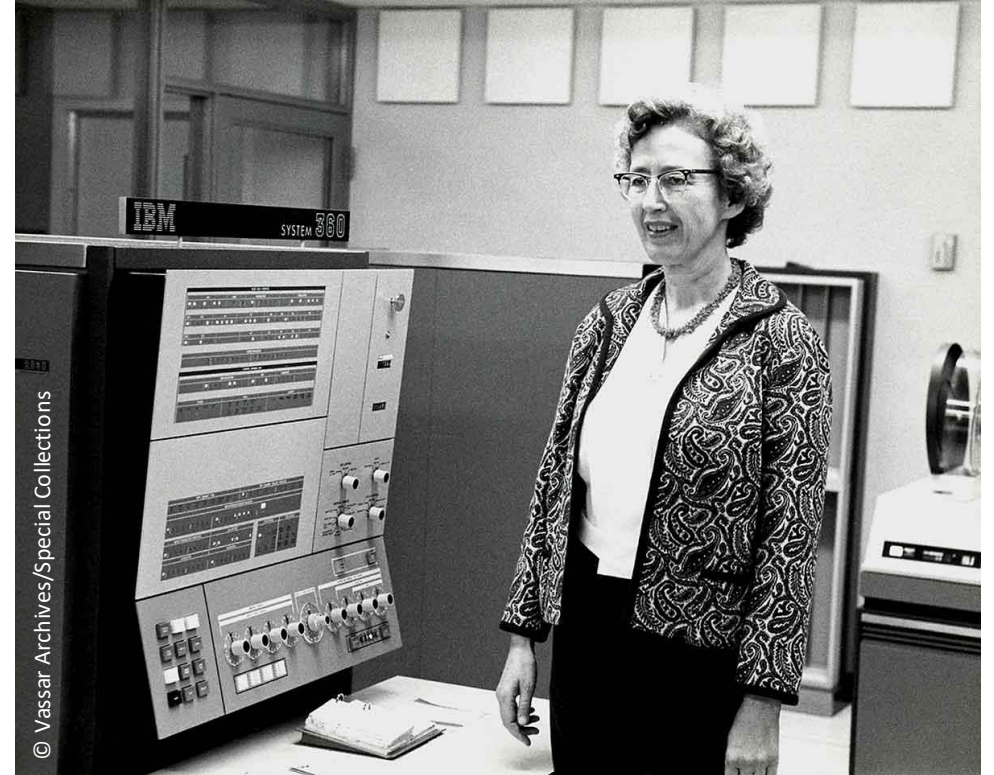

Source: thecomputerboys.com

Sparrow Lessons

Ada Lovelace, 1815 to 1852

- Ada was a mathematician and writer. Her father was Lord Byron, the famous poet, but he left Ada and her mother when Ada was just a month old.

- As she grew up Ada met many famous scientists. She worked with Charles Babbage who invented what he called an Analytical Machine, an early type of computer. Ada understood that this machine could be used for doing more than just arithmetic. She was the first computer programmer.

Sparrow Lessons

Grace Hopper, 1906 to 1992

- Grace was a computer scientist who worked for the United States Navy during the Second World War.

- She believed that it was possible to develop a programming language that used English words. Based on this idea, Grace worked with the team that produced the COBOL programming language which is still in use today.

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Sparrow Lessons

Hedy Lamarr, 1914 to 2000

Source: Inventors Digest

- Hedy was born in Austria. She started her film career in Czechoslovakia and then moved, first to Paris and then to Hollywood where she became a star. But Hedy was also an inventor.

- At the beginning of the Second World War, Hedy worked with pianist George Antheil to develop a system that stopped torpedoes from being sent off course.

- Their invention is used today in Bluetooth technology and WiFi systems.

Sparrow Lessons

Katherine Johnson, Dorothy Vaughan and Mary Jackson (1)

- Katherine (1918 to 2020), Dorothy (1910 to 2008) and Mary (1921 to 2005) worked on the Apollo 11 mission to land a man on the moon and on other Space Shuttle missions. They solved problems with the way the space rocket worked and the direction in which it flew.

- Katherine, Dorothy and Mary began work in the space programme as human "computers", people who carried out complex calculations. As their careers progressed, they all began to work with machine computers.

Sparrow Lessons

Katherine Johnson, Dorothy Vaughan and Mary Jackson (2)

Mary Jackson   Dorothy Vaughan   Katherine Johnson

- Mary was a mathematician and the first black female engineer at the American space agency, NASA.

- Dorothy prepared for the introduction of computers in the 1960s by teaching herself and her staff the programming language FORTRAN.

- Katherine was well known for solving complex mathematical calculations and using computers to solve these problems.

Sparrow Lessons

Karen Spärck Jones, 1935 to 2007

- Karen was born in Huddersfield and worked at the Cambridge University Computer Laboratory for many years.

- She taught computers how to understand human language. When we do online searches using Google we're using technology developed by Karen.

- Karen was keen to encourage more women to work in computing.

Source: cl.cam.ac.uk

Sparrow Lessons

Stephanie Shirley, born 1933

- After leaving school, Stephanie started work at the Post Office where she learned to write computer programs. In her spare time she studied for a mathematics degree.

- She became frustrated at the lack of opportunities for women at work and decided to start her own company which employed only women software engineers.

- When Stephanie started to write letters calling herself Steve it was much easier to make contact with business men, because they didn't know until they met her that she was a woman!

Sparrow Lessons

Martha Lane Fox, born 1973

- Sometimes you need imagination to see what computing might make possible. Martha Lane-Fox and Brent Hoberman started lastminute.com in 1998. Martha remembers that at the beginning it was difficult to persuade people that the internet was going to survive and that people would pay for things online.

- In 2004 Martha had a life changing car accident and had to re-think her career. She started Doteveryone which campaigns for better tech for everyone.

Source: gdsteam

Sparrow Lessons

Why don't more women work in computing today?

- In the 1950s and 1960s about half the people who worked with computers were women. In the 1970s things began to change.

- In the UK today less than 25% of the people working in computing are women.

- The good news is that the number of young women taking computer science degrees is growing fast.

- If more women worked in computing, what difference do you think it would make?

Sparrow Lessons

Women working in computing today

- There are so many different jobs in computing today; here are a few examples:
    - Writing new software programs.
    - Researching and developing the latest technologies like artificial intelligence.
    - Creating new computer games.
    - Becoming an expert in cyber security to help keep everyone safe.
    - Starting new businesses that use technology to transform our lives.
- Let's meet some of the women who work in computing today.
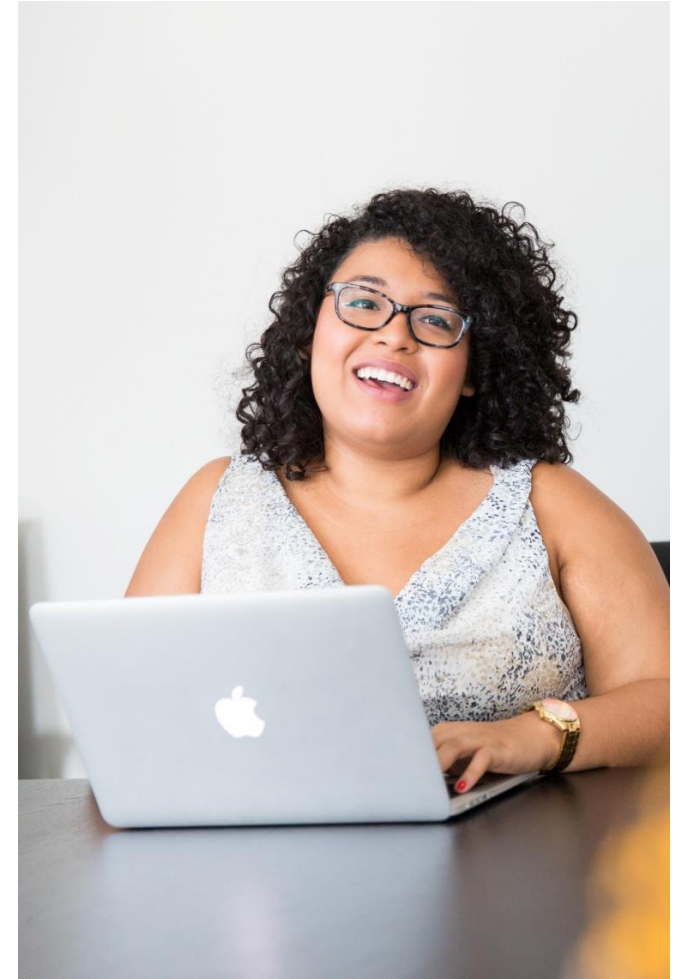
Catherine Breslin

- At university Catherine studied engineering, computer science and automatic speech recognition. Today she is a machine learning scientist with special skills in voice and language technology.

- Catherine builds technology products that use artificial intelligence. She joined Amazon just before Alexa was launched and worked on Alexa's speech recognition.

Sparrow Lessons

Claudia Natanson

- Claudia studied computer science and education at university. She left full of energy and determined to put into action all she had learned and experienced.

- She has become a leading cyber security professional, working in many different organisations in the UK and America.

- Claudia loves education and has worked on projects that help everyone to understand the importance of computer security.

Source: BusinessCloud

Sparrow Lessons

Ella Schofield

- Ella didn't enjoy education at school and left early without taking GCSEs. She later decided to study media communications at university.

- Her next job was working with designers and people who create adverts. The first year of this job was interesting but then Ella began to look around for something more satisfying.

- She had enjoyed coding as part of her university course and so Ella decided to take some training courses and become a software developer. She now really enjoys her work.

Sparrow Lessons

Sheridan Ash

- Sheridan has dyslexia and left school when she was 16 without any qualifications. She wasn't very confident but did have ambition. She had a successful modelling career at first and then, after getting some help with her dyslexia, took her A levels and studied at university.

- While studying Sheridan became interested in technology and innovation and this has been her career ever since.

- Sheridan started the charity *Tech She Can* which works to increase the number of women in computing.

Sparrow Lessons

Jaycee Cheong

Source: Bristol Live

- Jaycee studied human nutrition at university and tried a number of different jobs while she considered which career would be best for her.

- She had really enjoyed building a website as part of her GCSE studies and decided to train as a software developer and mobile web specialist.

- Soon after starting to work in computing, Jaycee was asked to become a team leader. She found that she enjoys passing on her skills and helping others achieve their best.

Sparrow Lessons

Eilidh Macleod

- Eilidh comes from a small island in Scotland. She studied games design and production at university.

- Eilidh began her career checking and testing games to make sure there are no mistakes before the games are put on sale.

- Now Eilidh is a games designer which she really enjoys. One of her projects was working on Angry Birds POP!, creating new levels and new features.

Sparrow Lessons

Noor Shaker

Source: BioPharmaTrend

- Noor is originally from Syria where she studied computer science at university. She continued studying and researching in Belgium and Denmark.

- Noor is especially interested in how artificial intelligence can be used to help create new drugs to treat diseases like COVID-19.

- She started a company in London that uses knowledge from chemistry experts and advanced machine learning technology to develop the chemicals needed for new drugs very quickly.

Sparrow Lessons

Beverly Clarke

- After studying computing at university Beverly had a number of different jobs before deciding to become a secondary school computing teacher. She helped create some of the BBC's Bitesize videos on computational thinking.

- Beverly has also worked for Computing At School which helps computing teachers and the National Centre for Computing Education.

- Beverly is the author of the book series for children, The Digital Adventures of Ava and Chip.

Sparrow Lessons

"My advice to my younger self would be, believe in yourself. Don't take setbacks to heart. When one door closes another one opens. Not everything works out all the time, but you'll learn from it anyway."

"Just open yourself up to whatever opportunities for development are available, you'll be way better for it. We want the industry to keep growing with passionate people."

"When I was thinking about what the world would look like in 10 or 20 years, I knew I had to go into Artificial Intelligence. I just saw the future going that way and I wanted to be part of it."

"Knowledge has the ability to empower anyone to continue learning and we need everyone's contribution in tech to ensure the tech we use will always be fair and accessible."

Sparrow Lessons

Would you like to work in computing?
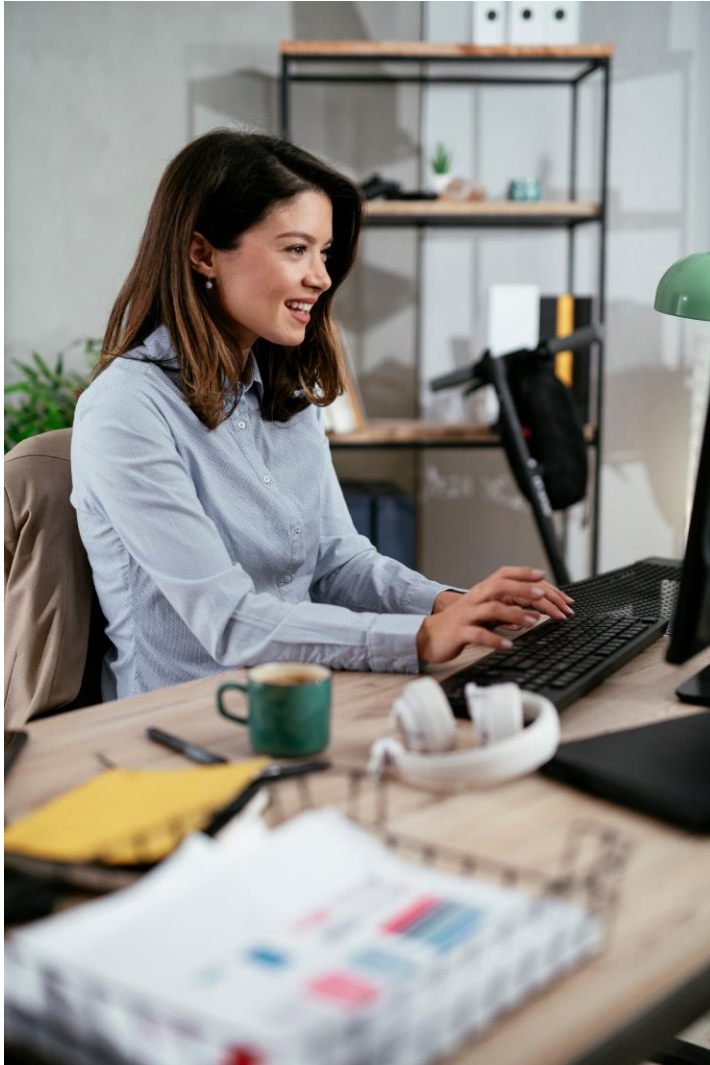
- The digital industry is growing fast! The increasing use of technologies like artificial intelligence and robots is attracting more people into computing careers.

- Technology gives us opportunities to improve lives and help solve the world's problems. New people are needed to work in computing all the time and it pays well too.

- There are many different careers in computing from very technical roles to jobs in marketing and sales.

Sparrow Lessons

Studying computer science at university

The number of young women taking computer science degrees is growing faster than for any other university subject in the UK.

Kayla Phillips Sanchez studied computer science and management.

"Computer science is a very flexible degree that will provide you with countless types of opportunities in the future, and which will challenge you and develop your problem-solving, analytical and creative skills."

Source: Archives of IT

Source: Archives of IT

Samantha Tyson studied computer science.

"It is an exciting area of study that is easy to be passionate about; especially since it is constantly evolving, in often unexpected ways. It really is what you choose to make of it, and it can take you wherever your interests lead; so throw yourself into it without reserve."

Sparrow Lessons

Digital apprenticeships

Apprentices have real jobs and get paid to train as well as getting hands-on experience.

Emalin Matthews had worked as a teaching assistant and at the NHS and Superdry before becoming a digital apprentice. She was always interested in computers and worked as a software developer during her apprenticeship at Co-op Technology.

Amy Groves left school at 16 without any clear idea of what she wanted to do. She saw an advert for IT apprenticeships at Lloyds Banking Group where she was working at the time and has never looked back. She is now a network software engineer.

Source: Y&H AAN

Source: Manchester Digital

Sparrow Lessons

What to do next

- **Join girls code club Z6 Wednesday Lunch time** ☺

- There are two activities to try:
  - Discover more about some of the women in this lesson
  - Create a poster
- Find out about working in computing and get some top tips at:
  bcs.org/it-careers/get-into-tech-how-to-build-a-career-in-it

- Learn about studying computer science at university
  ucas.com/explore/subjects/computer-science
- Find out more about digital apprenticeships at bcs.org/it-careers/apprenticeships

Sparrow Lessons