



HERITAGE QUIZ - WOMEN IN COMPUTING

MATCH THE PICTURE WITH THE DESCRIPTION

CAN YOU ALSO NAME THE WOMEN?

1 Computing's Visionary

In 1843 this remarkable woman imagined a machine capable of extraordinary things, limited only by the creativity of its programmer, nearly half a century before the first computers were built.

Her lengthy notes on it included the world's first published algorithm. She foresaw a device that could accomplish far more than mathematics, writing about its potential to compose music - a vision for the machine's potential far beyond what anyone else had considered. Nicknamed the Enchantress of Numbers, she died at the tragically young age of 36.

Answer: Picture _____

2 Laying the foundation for mobile computing

She was a pioneer in bringing personal computing to the UK. She designed the Acorn System 1 microcomputer, which went into production in 1979. She also co-designed the BBC Micro, specified its operating system and wrote the BBC BASIC programming language to run on it. Over a million BBC Micros were sold and it became the flagship computer used in thousands of UK schools during the 1980s to teach programming.

Starting in 1983, she co-designed a new microprocessor which was much simpler and used far less power than previous designs. This became the first in a family of what are now called ARM processors, used today in almost every smartphone and tablet worldwide.

In 1999, She led the design for another kind of microprocessor, called Firepath, which is now widely used in equipment which provides broadband services.

Answer: Picture _____

3 Pioneer Software Engineer

In 1969 this pioneering woman played a central role in the success of the Apollo 11 mission. As Director of the Software Engineering Division of the MIT Instrumentation Laboratory, she is attributed with preventing the abort of the mission just minutes before the moon landing! She went on to found a Technology company bearing her name, a software development company, and coined the term 'software engineer' - defining software development as a discipline in its own right. Her contributions to the science and technology sector have earned her the Augusta Ada Lovelace Award in 1986 and the NASA Exceptional Space Act Award in 2003.

Answer: Picture _____



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4 Entrepreneur and champion for women programmers

She began her career as a mathematician at the UK's Post Office Research Station, working on projects including the ERNIE computer used to calculate winners of the premium bond lottery. After a stint as a programmer at ICT, in 1962 she founded Freelance Programmers, one of the UK's first software start-ups, dedicated to employing women software developers working part time from home. Later renamed Xansa, in 2007 the company was acquired by Steria for several million pounds.

Today she ranks among the world's leading philanthropists, having given most of her wealth away in support of IT and autism (her late son's disorder).

Answer: Picture _____

5 Hollywood's Inventor

She was one of the world's most famous film stars during the 1940s – she was also an inventor.

In 1942 she and composer George Antheil patented an early version of frequency hopping as a means of secret communication. By utilising synced piano rolls to switch continuously between 88 radio frequencies, transmissions would be undetectable and less subject to interference.

Today, her idea is the basis for spread-spectrum techniques, underpinning WiFi and mobile communications.

Answer: Picture _____

6 A research pioneer in linguistics and information retrieval

Based in Cambridge, this woman carried out pioneering research in the fields of computational Linguistics and information retrieval. In 1972 she published her theory of "inverse document frequency", a concept that underpins internet searching techniques.

A professor of Computers and Information at Cambridge University until 2002, she was awarded the ACL Lifetime Achievement Award in 2004, and the British Computer Society's Lovelace Medal in 2007. She actively sought to encourage women to enter the field, quipping "computing is too important to be left to men!"

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7 The mother of COBOL

She was one of the first programmers of the Harvard Mark 1 computer and wrote its operating manual. In 1947 she became the first person to document an actual computer bug — a moth that was stuck inside — coining the term 'debugging!'

She pioneered the concept of compilers, allowing programmers to enter symbols or words instead of numbers to tell a computer what to do. Her Flow-Matic compiler was the inspiration for COBOL and she collaborated in its development and specification. Launched in 1959, COBOL became widely used by businesses, as one of the first programming languages to be machine independent. She had a long and successful career in the armed forces of the U.S.A.

Answer: Picture _____

8 Networking and educational Inventor

In 1985, she invented the spanning tree protocol, an algorithm which avoids the risk of an endless loop in networking data traffic. This became part of the standards underpinning the operation of the Internet, crucial to its robustness and scalability.

In the mid-1970s, she was also among the pioneers in teaching programming to young children. While working at MIT for Seymour Papert, one of the inventors of the LOGO educational robotics language, she invented a system that used physical objects representing commands which could be plugged together to teach programming concepts. This marked the beginning of the field of 'tangible computing'.

Answer: Picture _____

9 NASA mathematician

This woman was a mathematician employed by NASA to map the flight trajectories and prepare navigational charts for American astronauts. She worked on historic missions including that of Alan Shepard, the first American in space in 1959, John Glenn's Earth orbit in 1962, and Apollo 11's flight to the moon in 1969. When computers were introduced to NASA for the first time in 1962, she played a crucial role in verifying the mathematics behind the machine calculations. Born in 1918, during her career she co-authored 26 scientific papers. As an African American woman, she helped break down both race and gender barriers in science.

Answer: Picture _____



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10 Pioneer of modern programming techniques

In 1968, she became the second US woman to be awarded a PhD in Computing for her thesis on chess endgames. After a stint in industry, she joined MIT as a professor in 1972, becoming the first woman in their Computer Science faculty.

In the 1970s, there was a lot of interest in programming methodology—how to optimally structure software to be easy to write, modify and maintain. Her insights were pivotal. She designed two programming languages which established fundamental concepts, such as iteration abstractions, encapsulation and error handling, and proved crucial in the development of object-oriented programming. She made seminal contributions in the field of distributed computing, in which applications run across multiple computers connected by a network.

In 2008 she became the second woman to receive the Turing Award. Her work is reflected in almost every modern software application.

Answer: Picture _____

11 African Internet champion

This highly influential woman was pivotal in bringing the Internet to Africa. Born in the US, she moved to Ethiopia in 1975. Through her work at the UN, she was instrumental in bringing email connectivity to more than ten African countries during the 1990s, as a first step towards full internet connection. She championed the Pan African Development Information System, launched in 1980, which sought to improve information sharing and helped pilot electronic networking in the region.

Her key achievement was helping remove structural barriers to telecommunications in the region. Through her UN role, she convinced governments to lift the blocks on connectivity—including dismantling ISP monopolies, getting rid of customs duties on computers and lifting bans on the import of modems.

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12 At the vanguard of medical computing.

This woman earned her PhD in Electrical Engineering in 1951. In 1953 she and her husband moved to Israel, where they helped build WEIZAC, Israel's first computer. Returning to the US, she joined UCLA's medical school and in 1961 founded the computer laboratory at the Brain Research Institute. Here she was among the first to apply computing to medical research, pioneering the use of computer graphics and CAT scans to simulate neural surgery. Today, she is Professor Emerita in UCLA's computer science department. She has published over 50 papers on the use of computer technology in healthcare and biomedical engineering.

Answer: Picture _____

13 Founder of the UK's first software company

In February 1959 she founded Vaughan Programming Services, offering a bespoke solution for companies seeking to outsource their software development. This marked the beginning of the independent software industry in the UK.

Initially specialising in software for the Elliott computers where she had learned to program, the company evolved to focus on industrial process control applications, including monitoring programs for nuclear plants and railway signalling systems for British Rail.

Her skills were renowned - as a former colleague put it, "Whereas the rest of us tested programs to find the faults, she tested them to demonstrate they worked". She continued to play a hands-on role leading all software development at the company right up to her retirement in 1999.

Answer: Picture _____