

UNIT 8 – Programming

Reading 1

Skills:

- Details
- Make associations
- Vocabulary in context
- Understand vocabulary
- Insert words in a sentence
- Understand negative facts.

Getting started: Do you know anything about the origins of programming?

THE PIONEERS OF COMPUTER PROGRAMMING



Unlike some inventions—like the airplane (Wright Brothers) and telephone (Alexander Graham Bell)—the creation of computer programs isn't tied to any single name in history. Instead, **it was a halting, stop and go progress** that eventually led to what we think of as computer programming today, which is the ability to write instructions for a machine in near-English language. Here we'll look at some of the pioneers in this field.

Babbage and Lovelace

_____ mathematics and algorithms are vital to computer programming, we will start with the duo that is most widely credited for both the concept of computer programs and the creation of the first **one**. Charles Babbage is considered to be the father of the programmed computer. As a mathematician, he understood how all calculations were made up of smaller parts that could be mechanized. To do this, the machine would need an input device, a processor, a control unit and an output device. Babbage conceptualized such a machine and named it the *Analytical Engine*.

The conceptual *Analytical Engine* became even more important in computing history when Babbage's friend, Augusta Ada King, wrote the first computer program for it. The algorithm-based program she wrote for the *Analytical Engine* was intended to calculate Bernoulli numbers and would have worked if the machine had been built. So, this is why Augusta Ada King is widely **regarded** as the world's first computer programmer.

Herman Hollerith

The first practical step toward a programmed computer was taken by Herman Hollerith. Hollerith, and the Tabulating Machine Company he founded in 1896, has a connection with computing history. Hollerith's punch-card machines were definitely a step in the direction of a programmed and automated computer, but they also marked the birth of data processing. As if that major contribution weren't enough, his company also became part of the iconic IBM in the 1920s. As far as programming, the Hollerith Machines provided a medium by which programming could take place.

The War Trio: Alan Turing, Konrad Zuse and John von Neumann

A German, a Brit and a Hungarian greatly contributed to the field of computer programming, both in theory and in practice. The Brit, Alan Turing, came up with the Universal Turing Machine, a conceptual machine that could be programmed and reprogrammed to do different tasks. During the war he also designed many single-purpose computers for cracking codes. The Hungarian, John von Neumann, added a description of the architecture that would be needed to create a stored-program computer, giving scientists and academics a to-do list. Then, Konrad Zuse built the first programmable computer using a programming language of his own called Plankalkul, which was written in binary. The potential of his computers was largely overlooked by the German military, and Zuse's prominence in the history of computing has suffered for this reason. The fact that his pioneering work was done in Nazi-era Germany also didn't help his popularity.

Grace Hopper

American Captain Grace Hopper is the last stop in the story of computer programming. Hopper ended her career in the Navy with the rank of admiral, but she is best remembered for her work in computer programming. Hopper created the first compiler, which allowed programmers to use near-English instead of machine code, freeing them up from having to convert every command into lines of binary code.

She also pioneered the concept of a library of subroutines that different programs could use _____ than coding these again and again with each program. After Hopper, computer programming became a story of higher-level languages that allowed computer programmers to focus more on creating new applications than on learning and composing in machine code.

**Adapted from <https://www.techopedia.com/2/27836/development/programming-tools/the-pioneers-of-computer-programming>*

Answer the following questions:

1. What is stated about the history of computer programs in paragraph 1?
 - a. Alexander Graham Bell helped developed the first ideas of computer programming.
 - b. The initial instructions for a computer program were not written in English.
 - c. The invention of the airplane is associated with programming.
 - d. It is not connected with a particular person.
2. In paragraph 1, what does the author mean with the sentence “**it was a halting, stop and go progress**”?
 - a. A big pause interfered with any progress.
 - b. Programmers often found obstacles.
 - c. It implied a gradual development.
 - d. The process had to stop for a long time.
3. What word can be inserted in the gap in paragraph 2?
 - a. But
 - b. Although
 - c. However
 - d. In spite of
4. The word **one** in paragraph 2 refers to
 - a. programs
 - b. creation
 - c. computer
 - d. algorithms

5. What is stated about the *Analytical Engine* in paragraph 3?
 - a. It is a historical machine.
 - b. It was never made.
 - c. It has no significance at all.
 - d. It helps people calculate algorithms.
6. The word **regarded** in paragraph 3 is closest in meaning to
 - a. admired
 - b. respected
 - c. considered
 - d. beloved
7. What is stated about Herman Hollerith in paragraph 4?
 - a. IBM took over his company in the early 20th century.
 - b. Hollerith bough the Tabulating Machine Company in 1896.
 - c. He processed data using an IBM device he designed.
 - d. Hollerith's machines used the first computer programs.
8. What is stated about Turing, von Neumann and Zuse in paragraph 5?
 - a. Turing created devices to intercept information.
 - b. Konrad Zuse's work is really popular nowadays.
 - c. They all worked together on the design of a machine.
 - d. Von Neumann also worked as an architect at that time.
9. What is NOT stated about Grace Hopper in paragraph 6?
 - a. She is more famous for her role in programming than for being in the Navy.
 - b. Her last rank in the navy was captain.
 - c. She was born in the United States.
 - d. Her work enabled people to use a different language to program.
10. What word can be inserted in the gap in paragraph 7?
 - a. sooner
 - b. apart
 - c. instead
 - d. rather

What do you think?

Why is programming so important in this modern world?