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Margaret Hamilton: An Inspiration for Us All

In the field of software engineering, there are few who have has as significant an impact as Margaret Hamilton. As NASA’s first software engineer, she championed the team responsible for developing the on-board software for the Apollo missions and played an influential role in getting the first man to the moon (1). In fact, the software that she and her team developed ended up being the saving grace on the Apollo 11 mission when, three minutes before the astronauts landed, a crew member set a switch in the wrong position. This sent the software into overload and forced the team at NASA to consider aborting the mission. Luckily for the crew, Hamilton and her team had prepared for this situation. The software autocorrected itself by re-prioritizing tasks and dumping unnecessary information, allowing the astronauts to land on the moon safely (4). After preforming invaluable work for NASA and the space community, Hamilton went on to start two of her own companies in Cambridge, Massachusetts. She also created the Universal Systems language to help make the process of designing systems more reliable (1). In 2016, Hamilton was rewarded for all of her incredibly impactful work when Barack Obama awarded her the Presidential Medal of Freedom (6). While it is impossible to not be inspired by Margaret Hamilton’s achievements, it is really her perseverance, pioneering spirit, and determination in the face of challenges that had never been conquered before that I find truly inspirational.

Margaret Hamilton’s pioneering spirit is one of things I admire most about her. Upon hearing about MIT’s space program, Hamilton immediately knew that she had to be a part of it, despite the fact that at the time, the concept of space travel was foreign to most people. She hoped to do what no human had ever done before and set her dreams on achieving what many people believed to be impossible. She was brave enough to explore new frontiers and push the boundaries of science. At this time, it was not only the concept of space travel that was unfamiliar to people, but also the concept of software itself. During this time, computer science was just starting to surface and most computers were the size of entire rooms (2). The idea to use software to guide the Apollo missions was entirely new. Margaret Hamilton, however, was not deterred by the novelty of the task that lay ahead of her. In developing the software for the Apollo 11 mission, Hamilton challenged what people thought was possible. Because she saw no constraints to what she, or her software, could do she was able to be successful. Her eagerness to work on something that no one had ever done before inspires me to take chances and explore new opportunities. Hamilton’s refusal to back down from a problem just because other people thought it couldn’t be solved reminds me that I should never be limited by the world or others. Instead, I am only limited by what I can imagine can be achieved.

In order to accomplish all that she did, Margaret Hamilton also had to have incredible perseverance. Hamilton began her journey as a software engineer at a time when computer science and software engineering weren’t even established disciplines. In fact, Hamilton is credited with coining the phrase “software engineering.” Before her time, and even as she was starting out, people sort of looked down at software developers and scoffed at the idea that writing software could be considered a form of engineering (3). Despite the lack of acceptance by others, Hamilton continued to use the phrase “software engineering.” Gradually, others started to see the importance of software and did eventually come to accept Hamilton’s lingo. Hamilton also needed perseverance to work in an industry where her abilities may have been questioned because of her gender. Although Hamilton was the first engineer hired to develop software for NASA, her team primarily consisted of men. As a woman during this time with a husband in law school, Hamilton would have been expected to stay at home with her daughter and serve tea to any visitors (4). Despite these all of these obstacles, Hamilton was still able to be an incredibly successful engineer. Because of her persistence and tenacity, she was not confined by the gender stereotypes of her day and was able to do important and meaningful work. As a female in the field of software engineering, it is very inspiring to see a woman who succeeded at a time when it was incredibly difficult for a woman to succeed in the industry. Seeing how Hamilton achieved success despite facing numerous obstacles shows me that I can overcome the obstacles I face today.

Hamilton also showed incredible determination in the face of limited resources, particularly in her work on the Apollo missions. During the time of the Apollo 11 mission, computers were enormous and did not have screen interfaces (3). Thus, software development was done using punch cards. For me today, this is unimaginable. The software development process must have been incredibly tedious and time-consuming compared with what it is today. Another challenge Hamilton faced was that there was very limited space on the hardware that was on board of the space craft (3). This meant that she had to make the code concise, but still highly functional. Hamilton and her team also needed to be sure that their code was entirely error-free. Since the software would be used to guide the astronauts in space, Hamilton and her team had only one chance to get it right or it could mean disaster and even death for the astronauts. Hamilton’s determination to get the software just right and to do what needed to be done in the face of seemingly insurmountable odds reminds me that I should never give up. Hamilton’s ability to work within such intense constraints highly impressive. Understanding the challenges that Hamilton faced encourages me to view difficult circumstances and constraints as opportunities to achieve something new rather than as obstacles.

Hamilton’s work is also intriguing to me on a more personal level, as I have had an interest in space and space travel throughout my life. When I was young, my dream job was to be an astronaut. My sisters and I would craft make-shift “telescopes” out of empty paper-towel rolls. We would then put on bike helmets, sit on top of our washing machine and pretend that we were on a rocket that was about to launch into space. As I got older, the dream of becoming an astronaut faded, but I maintained my interest in space and its plethora of mysteries. At some point in the future, I hope to work on software projects related to space and space travel. I now know that I owe any opportunity I have to do this in part to Margaret Hamilton. Thanks to the fact that she pioneered the use of software on space crafts, I now have the opportunity to work on similar projects. Seeing how significant an impact Hamilton had on both space travel and the software engineering world is incredibly encouraging for me.

For any aspiring software engineer, Margaret Hamilton’s story is impressive and encouraging. Her groundbreaking work, both on the Apollo missions and on the development of the Universal Systems Language, helped to revolutionize the field of software engineering. Her passion and dedication enabled her to be a true trailblazer. She is an inspiration for me and I’m sure she will inspire future software engineers for generations to come.

Works Cited

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