The person I chose to research that had a profound impact on computer programming was Margaret Hamilton. Being an Aerospace Engineering Major myself and focusing on guidance, navigation, and control, it was only natural to pick her as she contributed greatly to the field during her involvement with the Apollo missions in the 1960s.

Margaret didn't start out as a programmer or in GNC initially. Graduating with a degree in mathematics, Margaret Hamilton began her career as a professor. Later, she moved with her husband and pursued a graduate degree and research in the meteorology department at MIT. While there, she would eventually join the MIT Instrumental Lab (now called Draper Labs) and work on contracts with NASA for air defense system software. When the 60s rolled around and the Apollo program began sending successful missions into subspace, NASA contracted the MIT Lab and Margaret to work on the guidance and control software for future Apollo missions. This would include guidance code, system software, error detection, and recovery software capabilities for the lunar lander and the command module, which would stay in orbit and control descent once back in Earth's orbit. After successful Apollo missions sending empty capsules to lunar orbit and back, it was time for Apollo 11. During the mission, there was an incident during lunar landing where the 1201 and 1202 alarms went off, and the astronauts ended up with a go/no-go decision. They decided to continue the landing, and thankfully the software recovered moments before touchdown. The issue was later found to hardware related as the CPU was being overloaded (too many interrupts by the astronauts) and the crew accidentally set the rendezvous radar switch in the wrong direction. Thanks to Margaret and her team's foresight and knowledge of their code, the astronauts were instructed to go through with the mission without aborting. Even though many interruptions would trigger certain error displays, the priority display logic and focus on critical processes during landing would ultimately save the mission. In subsequent Apollo missions, this software was further refined to clear queues, restart functions, and only perform high priority tasks while landing. Thanks to her contributions to the flight code that guided lunar and command modules in cislunar space, Margaret was handed the medal of freedom later in her life. She was also instrumental in coining the phrase and meaning of software engineer to describe her team's efforts in developing code and debugging during the missions.

These contributions make it plenty clear why Margaret Hamilton is remembered for her contributions to computer programming. The degree of difficulty in developing embedded software for Apollo missions in the 1960s when computer programming wasn't much of thing speaks volumes of her ingenuity and foresight. The confluence of software

and hardware issues and their subsequent debugging is a very important field in today's industry, so the interfaces, debugging strategies, and decisions made by Hamilton and her team set a sort of precedent for software developers to come in the next decades. They also inspire aspiring GNC engineers such as me to develop and advance on the work that took us to the moon in the 60s.

Works cited:

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