L-12

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Summary

In this interview David Gifford and Alfred Spector, discussed IBM's development of the Primary Avionics Software System (PASS) in the NASA's space shuttles. They had several other roles on the project before this and they learned a lot about adaptability in the workplace and testing methods. They decided their verification side and their dev side would be equally large and they took time with their software. They tried to remove as many bugs as possible in the beginning rather than correcting errors after the fact and having to retest. This created a reliable software that was well engineered from the ground up for redundancy and safety.

The main system was run from five computers and was stored in peices on two large data storages. The main programs only existed on 4 systems at one time, rather than just one or all five. These systems were redundant, recieving the same data and ensuring they return the same data, and all within 150 micro seconds of one another. The engineers at IBM also added a way to upload a program to the computers that would allow the shuttle to return to earth. But this was only as a last resort. The fifth system was required for the Backup Flight System which was independantly programmed outside of IBM on a subset of the main system's requirements for takeoff and landing. The operating system was written in assembly and the programs were written in HAL/S. The OS was written in such a way that vital systems would immediately recieve higher priority than non-essential tasks.

The system itself provided the core functionality of the shuttle. It provided space navigation, orbital procedures such as landing or takeoff, as well as maintenance checking before and during launch.

Bibliography

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