Given their several applications, covering arrays have become a topic of significance over the last twenty years in both the mathematical and computer science fields. A covering array is a $N \times k$ array with strength $t$, $k$ rows of length $N$, entries from the set $\{0, 1, \ldots, v - 1\}$, and all $v^t$ possible combinations occur between any $t$ columns, where $N, k, t,$ and $v$ are positive integers. The focus of our research was to explore the different constructions of strength two and strength three covering arrays, to find better covering arrays (i.e. more cost and time efficient covering arrays), and to see if covering arrays can detect a fault in a system. Through analyzing the covering arrays that we constructed, we were able to successfully prove that in general, a covering array of strength $k + 1$ can detect a single fault between any $k$ or fewer variables in a system. Some areas of future research would include finding the location of a fault in a system or detecting two or more faults in a system.