Questions relating to the data generated for the tool:

* Do we need to specify an experimental design that is specific for the Statistical Debugging tool that will generate runs that test all of the predicates/compound-predicates that we want to check?

Desired functionality for Conditions Finder:

* Need a GUI
* Specify numeric checks to compare all of the predicates against
  + i.e. Predicates == 0, Predicates > 0, and Predicates < 0
* Select a parameter and define bounds to check against
  + i.e. P1 > 50, P1 > 75, 10 < P2 ≤ 30
* Create compound-predicate checks:
  + i.e. P1 = P2 && ResultCondition > 95
* Specify the value of the result that qualifies as a successful simulation from the GUI. This will prevent users from needing to manually alter the csv file to test against different result conditions
  + i.e. the input file (simulation outputs) contains the simulation output in the final column and the tool is responsible to assigning the 0 or 1 dependent upon the specification of the user
  + this will allow for the easier identification of a point at which predicates always being associated with a 1 will appear
* Present a grid or matrix where predicates can be selected. Only these predicates will be generated in the output
  + i.e.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P1 | P2 | … | Pn |
| P1 | X | X |  | X |
| P2 |  | X |  |  |
| … |  |  |  |  |
| Pn | X |  |  |  |

* Specify different files or excel tabs to output certain data. This can potentially be a component of the matrix above.
  + i.e. all model elements pertaining to X are output in tab 1, all elements pertaining to Y are output in tab 2, etc.
* Option to not output cells that have a sample size of 0
  + Or output cells with a sample size of 0 to a separate file
* Output only values with a suspiciousness value within a given range
  + i.e. Suspiciousness == 1.0 or Suspiciousness > 98 or 45 < Suspiciousness < 55
* Specify a specific predicate group to check
  + i.e. P1 + P2 + P3 > 20
* For values that are true for a predicate inequality, such as P1 == P2. Can the values of P1 & P2 when the result is true be shown and the results of P1 & P2 when false be shown?
  + In essence, are there values of the parameters when equal that produce a true or false outcome all the time.
    - i.e. when P1 == P2, the suspiciousness is 0.5 with 500 samples. However, in 100 of these samples the value of P1 and P2 equal 80 and for XX/100 of these cases the simulations yielded success.
* Need a way to specify how to eliminate runs for predicates that the predicate is not applicable
  + i.e. if there are no sensors created in one run, then the values set for that sensor are DON’T CARES since the sensor does not appear. Therefore, comparing the result of this run with respect to the sensor will add useless cases to the results. Meaning that if the sensor is turned off in 100 cases then the resulting sample size should be 100 less (i.e. sample appears in 85/100 cases instead of 130/200 cases).