eBPF Summer Report Outline

1. Intro
   1. Summary of Main Purpose
2. What did we try to accomplish
   1. Background
   2. Specifics for my part
3. Broad Approach
   1. Formula for every ebpf command in fol
   2. Create CFG to deal with branching
4. How did I deal with linking commands together and branching
   1. SSA
   2. CFG
      1. Leader rules
      2. Exit commands
   3. Examples to show specific links
      1. Exit commands
5. Tools/Skills Development
   1. General First Use of libraries
      1. networkX Library
      2. z3Py
6. Results
   1. Number of tests passed in SmartNic
   2. Problems existing with current code
      1. Can only do a single pass on a single input, cannot do a full Boolean check over an input range
      2. Limited Instruction availabilities
         1. No memory access
         2. No map access
      3. Instruction list access
         1. Requires either manual input, or a text file of a highly specified form
         2. Text file input not in place yet
7. Future Extensions
   1. Memory/Map instructions
   2. Checking all paths, using phi functions to optimize path choice
   3. Implementing a way to check a range of values without having to manually input them
8. Personal Reflections/Discussion
   1. What kinds of different ways of thinking have I learned
   2. Writing/commenting code for other readers/future users
   3. What skills have I gained
   4. What could I have done differently
      1. Earlier clarification of procedure/theoretical steps instead of just building what I assumed would work would hae probably saved me a week or two in July
9. Source Code Documentation
   1. How to use program
      1. Command line codes
   2. Expected Outputs
      1. Include full printout of test instruction set with manual inputs