Programming Project 1

Due October 15, 2024

1. Build a parser to read ISCAS-85 files and write it out in json format. Python preferred, but you can also do it in C++.

2. Write a C++ program to read the json file and set up a Gate class.

3. Write output file as shown below:
   It has a gate number, followed by gate type, followed by a list of fanout gates. Please note that this is a gate-oriented netlist, not a net oriented and therefore has no nets such as fan from net. New gates called PO are added starting with gate number that starts after line number and incremented sequentially for describing primary outputs in order.

```
1    PI   10
2    PI   16
3    PI   11 10
6    PI   11
7    PI   19
10   NAND  22
11   NAND  19  16
16   NAND  23  22
19   NAND  23
22   NAND 24
23   NAND 25
24   PO
25   PO
```

4. Also write out the fault list in the format <gate1 gate2 fault> as shown below, where the stuck-at-fault 0 or 1 is in the connection between gate1 and gate2.

```
1      0 1
2      0 1
3      0 0
3      0 1
10     3 1
11     3 1
6      0 1
7      0 1
```

```
10     0 1
11     0 0
11     0 1
16    11 1
19    11 1
16     0 0
16     0 1
22    16 1
23    16 1
19     0 1
22     0 0
22     0 1
23     0 0
23     0 1
```