CS 4501/6501: In-class 11
Logic Coverage Criteria

2-Nov-2017

Names:

Purpose: Understand the basic concept of logic coverage criteria (predicate coverage, clause coverage, combinatorial coverage, determination)
Instruction: Work with your neighbors in groups. Consider the following predicates

```
(1) p = a XOR b
(2) p = a!b + ac
(3) p = a -> (b -> c)
```

Identify the circumstances under which each clause determines the value of the predicate. For practice, we will work through all the following methods. At quiz/exam time, you should use the method that you are most comfortable with.

- Direct observation (works great on easy predicate)
- Analysis of the truth table (the "tabular-pairs" approach)
- Direct computation (boolean calculus, XOR)

Then, compute all pairs of inputs that satisfy the three ACC interpretations (GACC, CACC, and RACC) for each clause in each predicate.

The recommended method of computation is as follows (assuming clause of interest is "a").

```
GACC: Pa = T; a = T
      Pa = T; a = F

CACC: Same as GACC, with additional constraint that predicate differs between the two inputs

RACC: same as GACC, with additional constraint that predicate differs between the two inputs
      and minor clauses are the same on the two inputs
```

Next, compute all pairs of inputs that satisfy the two ICC interpretations (GICC and RICC) for each clause in each predicate.

The recommended method of computation is as follows (assuming clause of interest is "a").

```
GICC: P = T; Pa = F; a = T
      P = T; Pa = F; a = F
      P = F; Pa = F; a = T
      P = F; Pa = F; a = F

RICC: same as GICC, with additional constraint that minor clauses are the same on the two inputs
```

Write out the truth table, and identify rows (and then pairs of rows) that satisfy the various constraints. Use the same numbering on the truth table as the online tool uses.