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CPA-BAM-BnB: Block-Abstraction Memoization and Region-based Memory Models for Predicate Abstractions

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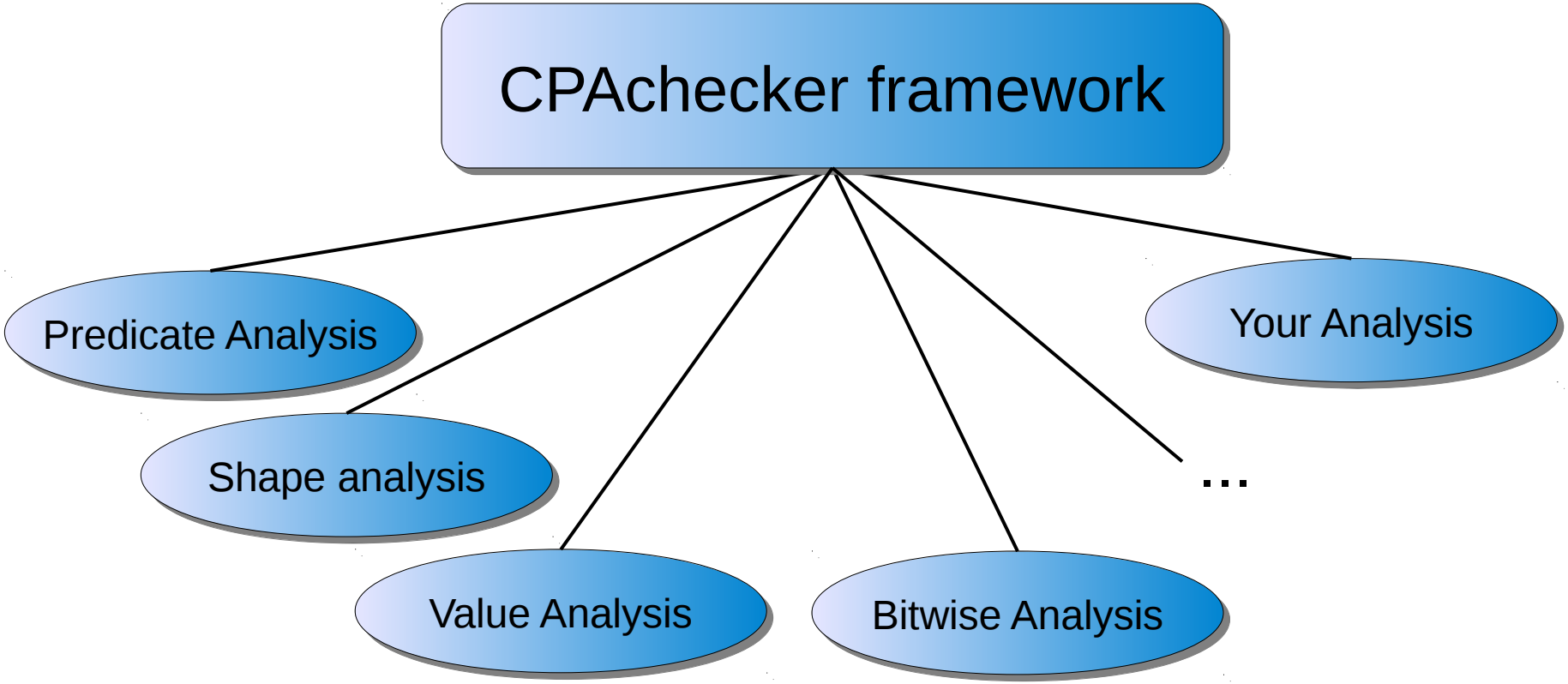
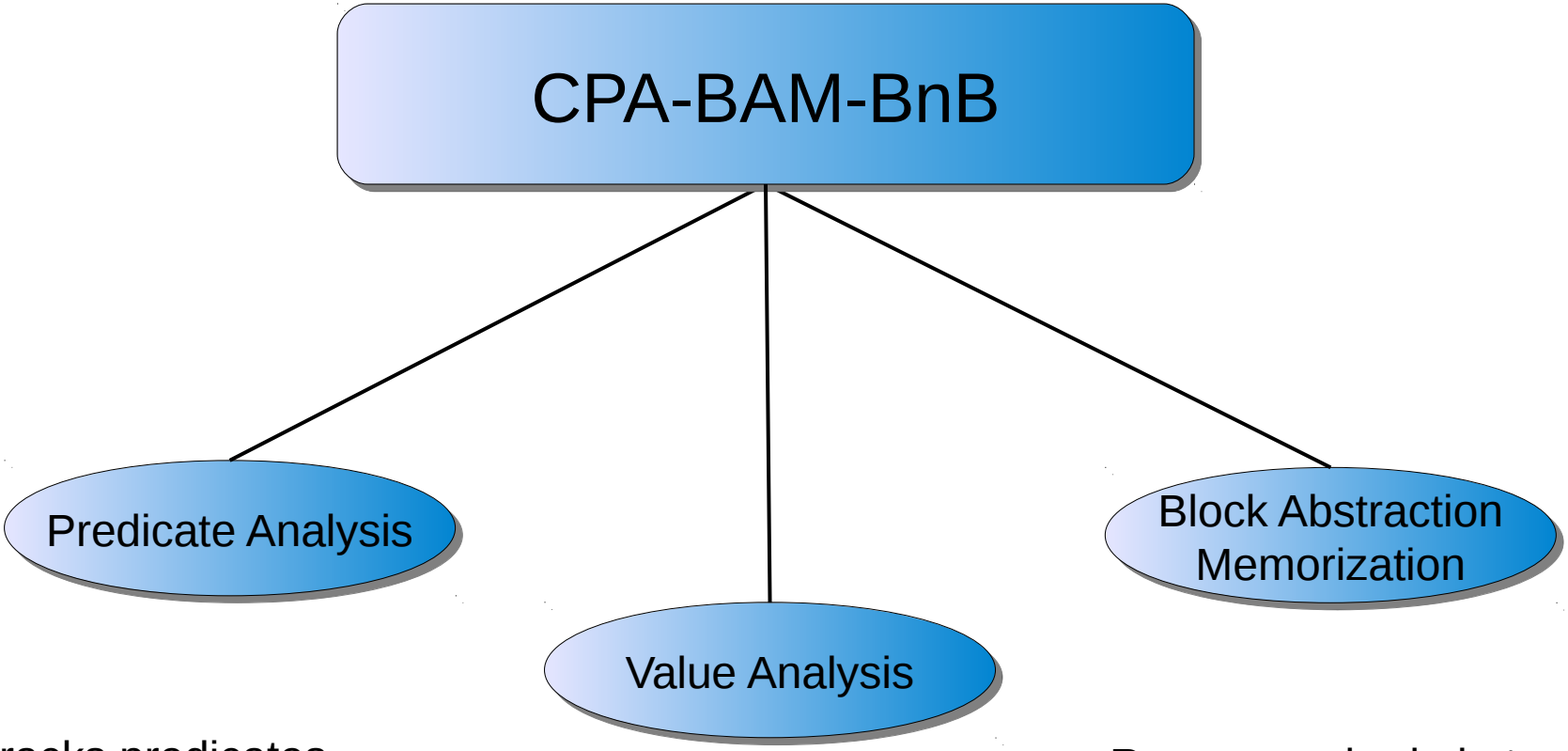

CPAchecker framework
Predicate Analysis
Shape analysis
Value Analysis
Bitwise Analysis
...
Your Analysis



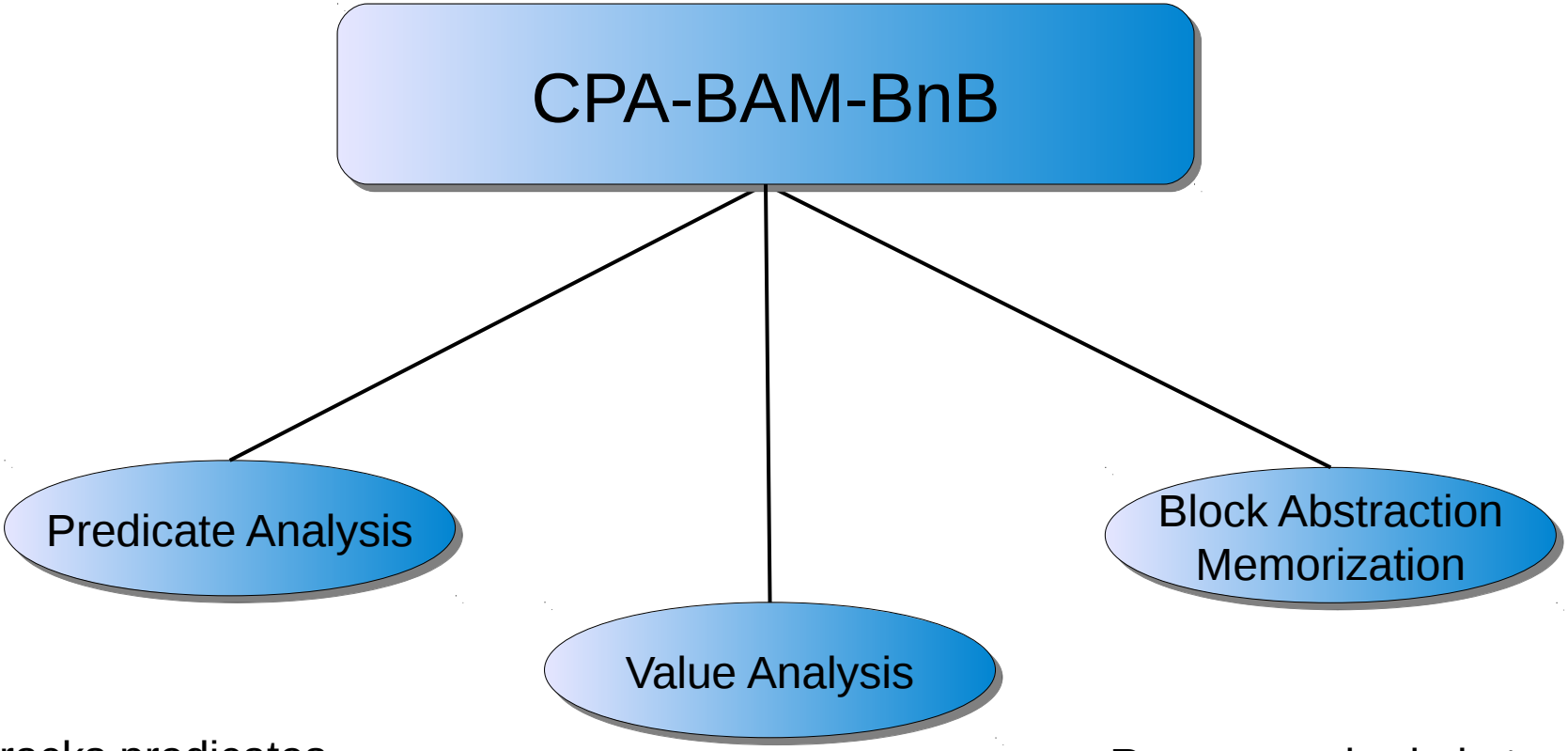
- Tracks predicates

var > 0 && *p < var

- Tracks explicit values

i = 0 && j = 1

- Reuses cached abstraction



- Tracks predicates

var > 0 && *p < var

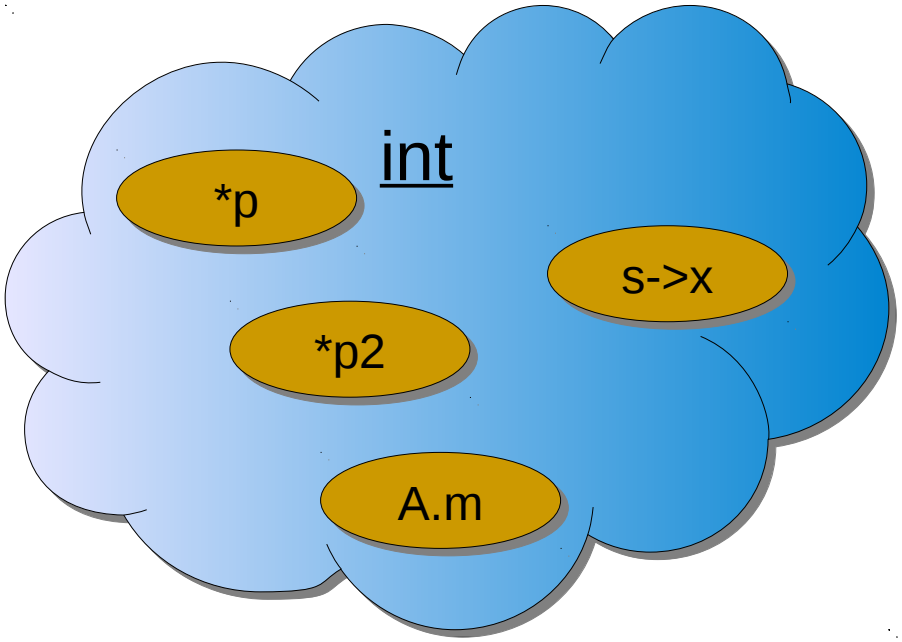
Memory Model

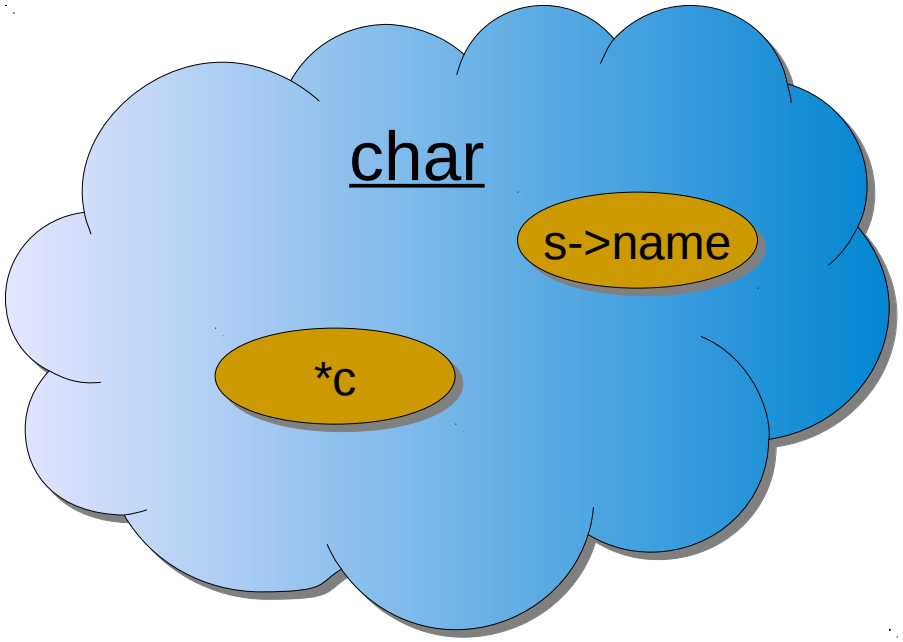
- Tracks explicit values

i = 0 && j = 1

- Reuses cached abstraction

Memory Model

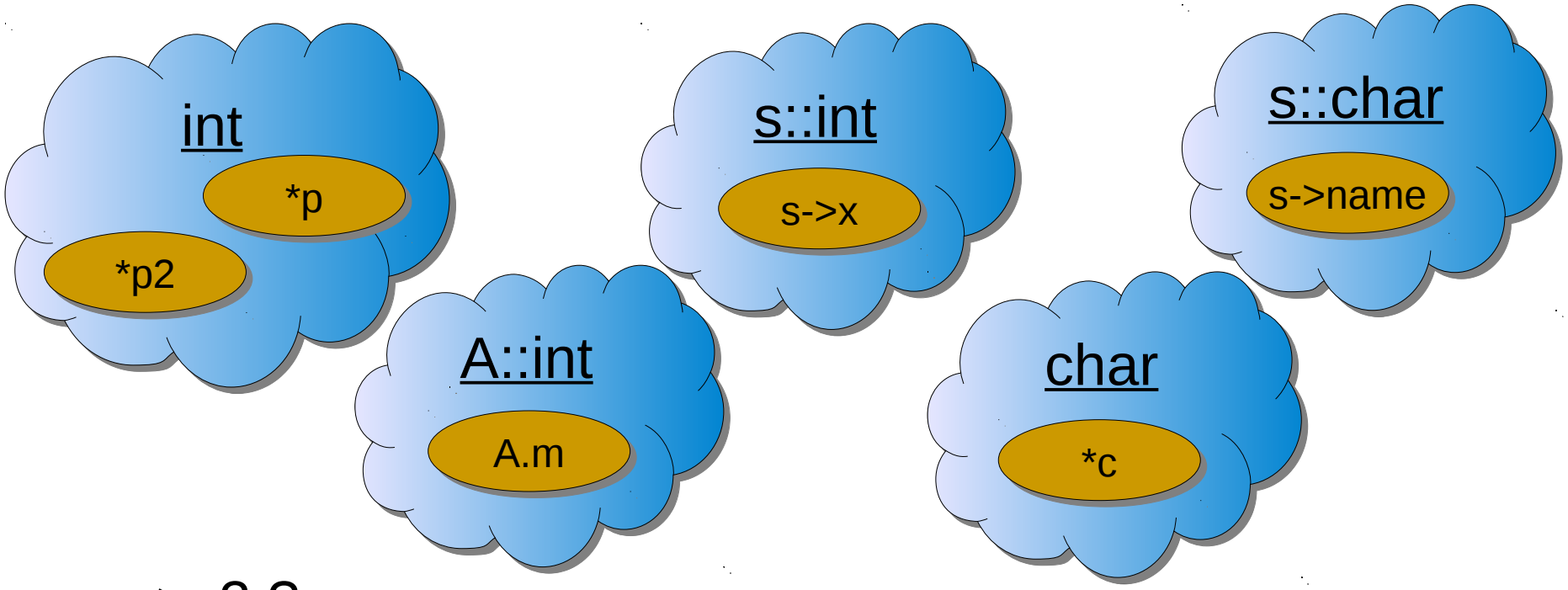




p ≠ p2 ≠ &A.m ≠ &(s→x) ?

c ≠ &(s→name) ?

BnB Memory Model



p ≠ p2 ?

Difference Default vs. BnB Memory Models

SV-COMP benchmark set

	Correct true	Correct false	Incorrect true	Incorrect false	Total CPU time (s)
Default	9	17	0	1	31600
BnB	15	8	0	1	28900