Horn Minimization

An overview of some existing algorithms

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Closure operator and systems

1.1 - Elements of set theory

Set Σ of attributes. A map $\varphi : 2^{\Sigma} \longrightarrow 2^{\Sigma}$ is a *closure operator* if, $\forall X, Y, Z \subseteq \Sigma$:

- $X \subseteq \varphi(X)$ *(increasing)*
- $X \subseteq Y \longrightarrow \varphi(X) \subseteq \varphi(Y)$ *(isotone)*
- $\varphi(\varphi(X)) = \varphi(X)$ *(idempotent)*

Some details :

- (Σ, φ) is a closure space,
- X is *closed* if $X = \varphi(X)$,
- Σ^{φ} set of closed sets : *closure system*.

Example of closure operator

1.1 - Elements of set theory

Notations

1.1 - Elements of set theory

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```
typedef struct vertex vertex_t;
typedef std::pair<FCA::BitSet, vertex_t> elt_t;
std::vector<std:string> sigma = {"a", "b", "c", "d"};
elt_t *p = NULL;
void *c = nullptr;

// defines a structure
struct vertex {
  std::map<std::string, std::list<elt_t *>> edges;
  unsigned int counter;
};

if (p) { exit(0); } else { return "Pouet"; }
```

title

1.1 - Elements of set theory

title

2.1 - early 80s

title

2.1 - early 80s

title

3.1 - Pouf

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3.1 - Pouf