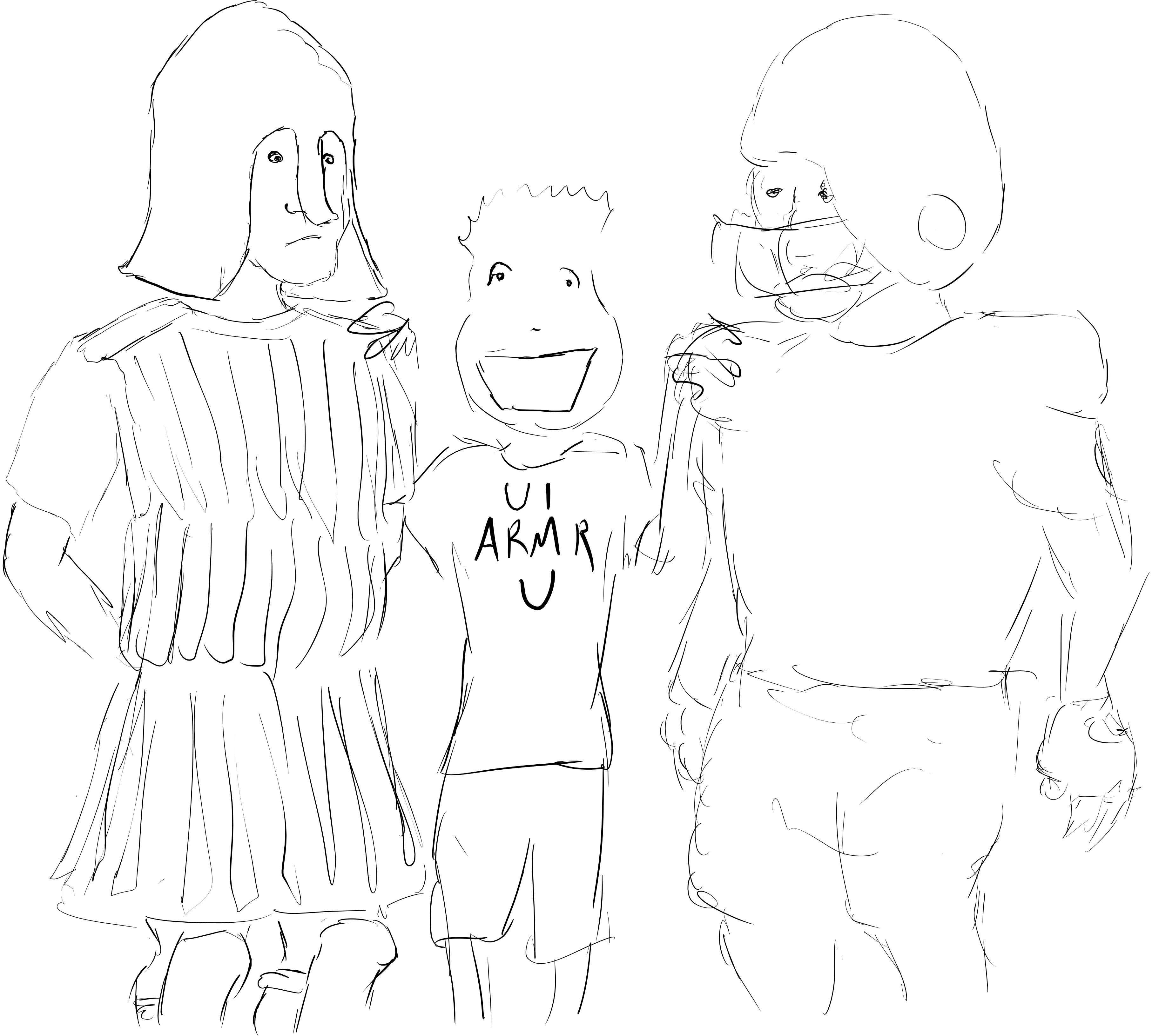
UI
ARMR
U

$\{1, 2, 3\} = \{3, 2, 1\}$

Cardinality

$|\{1, 2, 4\}| = 3$

$\{1\} \neq 1$

$\{1, \{1\}\}$

$\in$

$\cup$

$\cap$

Set-builder notation

$\mathbb{Z}$

$$\{ \underbrace{x^2}_{\text{expression}} \mid \underbrace{x \in \mathbb{Z}}_{\text{predicate}} \} = \{0, 1, 4, 9, 16, 900, \ldots\}$$

expression

variable

T or $\perp$

$\{1, -1\}$

$$\left| \left\{ \frac{x}{|x|} \;\middle|\; x \in \overset{\text{real}}{\mathbb{R}} \underset{\text{and}}{\boxed{\wedge}} x \neq 0 \right\} \right| = 2$$

$$A \cup B = \{x \mid x \in A \underset{\text{or}}{\vee} x \in B\}$$ union

$$A \cap B = \{x \mid x \in A \underset{\text{and}}{\wedge} x \in B\}$$ intersection

$$A \setminus B = \{x \mid x \in A \wedge \neg(x \in B)\}$$ set difference

$$\{1,2,4\} \setminus \{1,3\} = \{2,4\}$$

$\subseteq$ $\leq$

$\subset$ $<$

$\neg(x \in B)$

$x \boxed{\notin} B$

Class $\supseteq$ friends

Class = friend

or

Class $\supset$ friends

$A \subseteq B$

– is the same as –

$A \cup B = B$

$A \supseteq B$

superset of

$A \cup B = A$

dorm room in class

$\{$you, friends, ...$\}$ $\subseteq$ $\{$you, friends, teacher, others ...$\}$

Subset — Subset of — Superset

$A \subset B$ — $A \subseteq B$ $\wedge$ $A \neq B$

proper subset

$A \subseteq B$

all $x \in A$ are also $\in B$

$4 \nless 3$:(

$4 \geq 3$:)

$\subseteq$ $\leq$

$\subset$ $<$

$\neg(x \in B)$

$x \boxed{\notin} B$

$A \subseteq B$

– is the same as –

$A \cup B = B$

$\underbrace{\text{Class} \supseteq \text{friends}}$ – Class = friend or – Class $\supset$ friends

$A \supseteq B$

superset of

$A \cup B = A$

dorm room in class

$\{$you, friends, ...$\}$ $\subseteq$ $\{$you, friends, teacher, others ...$\}$

Subset

Subset of

Superset

$A \subset B$ – $A \subseteq B$ $\wedge$ $A \neq B$

proper subset

$A \subseteq B$

all $x \in A$ are also $\in B$

$4 \not< 3$:(

$4 \geq 3$:)

Power set

$$|\mathcal{P}(A)| = 2^{|A|}$$

$$|A \cup B| \leq |A| + |B|$$

$$|A \cap B| \leq \min(|A|, |B|)$$

$$\text{pow}(A)$$
$$\mathcal{P}(A) = \{ S \mid S \subseteq A \}$$

$$A = \{2, 3, 5, 7\}$$

$|A| = 4$

$2^4 = 16$

$\mathcal{P}(A) = \{ \{\},$
$\{2\}, \{3\}, \{5\}, \{7\},$
$\{2,3\}, \{2,5\}, \{2,7\}, \{3,5\}, \{3,7\}, \{5,7\},$
$\{2,3,5\}, \{2,3,7\}, \{2,5,7\}, \{3,5,7\},$
$\{2,3,5,7\},$
$\}$

$$x \in \mathcal{P}(A) \equiv x \subseteq A$$

132

$$\{ x \mid x \in \mathcal{P}(\text{class}) \wedge |x| = 3 \}$$

$$\mathcal{P}(\{1\}) = \{\{\}, \{1\}\}$$

$$\mathcal{P}(\{\}) = \{\{\}\}$$

$$\mathcal{P}(\mathcal{P}(\{\})) = \{\{\}, \{\{\}\}\}$$

$$A \in \mathcal{P}(A)$$

$$A \subseteq A$$

$$\{\} \in \mathcal{P}(A)$$

$$\{\} \subseteq A$$

$$|\{\}| = 0$$

$$|\mathcal{P}(\{\})| = 2^{|\{\}|} = 2^0 = 1$$

Mutually exclusive

$x \in B$ and $x \in A$

rare in computing logic vocab

A and B are disjoint if $A \cap B = \{\}$

subset

superset

Code works

$\underbrace{\text{set of possible chem}}$ $\underbrace{\text{set of causing chem}}$ are disjoint

$A \cap B \neq \{\}$

$A = \{1, 2, 4\}$

$B = \{1, 3\}$

$A \subseteq B$ is false

$B \subseteq A$ is false