6CCS3AIN & 7CCSMAIN, 2018, Tutorial 07

(Version 1.1: changed Q2aii from "The set $\{a3\}$ defends $\{a3\}$" to "The set $\{a3\}$ defends $a3$")

1. Consider the abstract argumentation framework $\langle S, R \rangle$, where $S = \{a1, a2, a3, a4, a5\}$ and the attack relation $R = \{(a1, a2), (a2, a1), (a2, a3), (a3, a4), (a4, a5), (a5, a3)\}$

   (a) Draw the graph that represents $\langle S, R \rangle$.

   (b) What are the conflict-free subsets of $\langle S, R \rangle$?

   (c) What are the admissible subsets of $\langle S, R \rangle$?

   (d) What are the complete extensions of $\langle S, R \rangle$?

   (e) What is the grounded extension of $\langle S, R \rangle$?

   (f) What are the preferred extensions of $\langle S, R \rangle$?

   (g) List any stable extensions of $\langle S, R \rangle$.

   (h) Which arguments are skeptically accepted under the preferred semantics?

   (i) Which arguments are credulously accepted under the preferred semantics?

2. Consider the following argumentation framework.
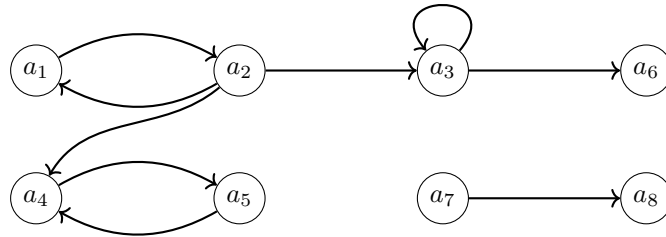
   (a) Which of the following statements are true?

      i. The set $\{a3, a4\}$ is conflict-free.
      ii. The set $\{a1, a6, a7\}$ is conflict-free.
      iii. The set $\{a3\}$ defends $a3$.
      iv. The only arguments that the set $\{a1, a5\}$ defends are $a1$ and $a5$.
      v. The empty set does not defend any arguments.
      vi. The empty set is admissible.
      vii. The empty set is a complete extension.
      viii. The set $\{a2, a6\}$ is admissible.
      ix. The set $\{a1, a3\}$ is admissible.
      x. The set $\{a2, a5, a6\}$ is a complete extension.
      xi. The set $\{a1, a4, a7\}$ is a complete extension.
      xii. The set $\{a7\}$ is a complete extension.

   (b) What is the grounded extension?