CAS 701

Logic and Discrete Mathematics

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McMaster University, Fall 2017

Project

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Each CAS 701 student is required to do a group project with one or two other students. The students in the course have been divided into groups randomly by the Instructor (see the accompanying text file entitled "Project Groups"). Each group will choose a leader, select a mathematics software system as a topic, and send the Instructor a one-paragraph description of their proposed system. If the topic is approved by the Instructor, the group can then proceed with the project.

The project will consist of two components:

1. A two-page description of the mathematical software system chosen for the project. It will be **due on Friday, December 8**.

2. A 20-minute presentation of the mathematical software system that gives an overview of the system; describes the group's experiences in obtaining, installing, and learning how to use the system; and demonstrates how the system is used. The presentations will be **given on November 28, December 1, and December 5**.

These two components of the project should be divided between the group members in some appropriate manner.

Suggested Topics

1. Proof assistants

    a. ACL2.

    b. Agda.

    c. Coq.

    d. HOL Light.

    e. Isabelle/HOL.

    f. Lean.

    g. Mizar.

    h. PVS.

2. Computer algebra systems:

   a. GAP.
   b. Magma.
   c. Maple.
   d. Mathematica.
   e. SageMath.

3. Model checkers

   a. SAL.
   b. Spin.

4. SAT solvers.

5. SMT solvers.

6. Formal software development systems:

   a. CASL.
   b. Event-B.

7. GMP, the GNU Multi-Precision Library.