WGL Meets TGTP

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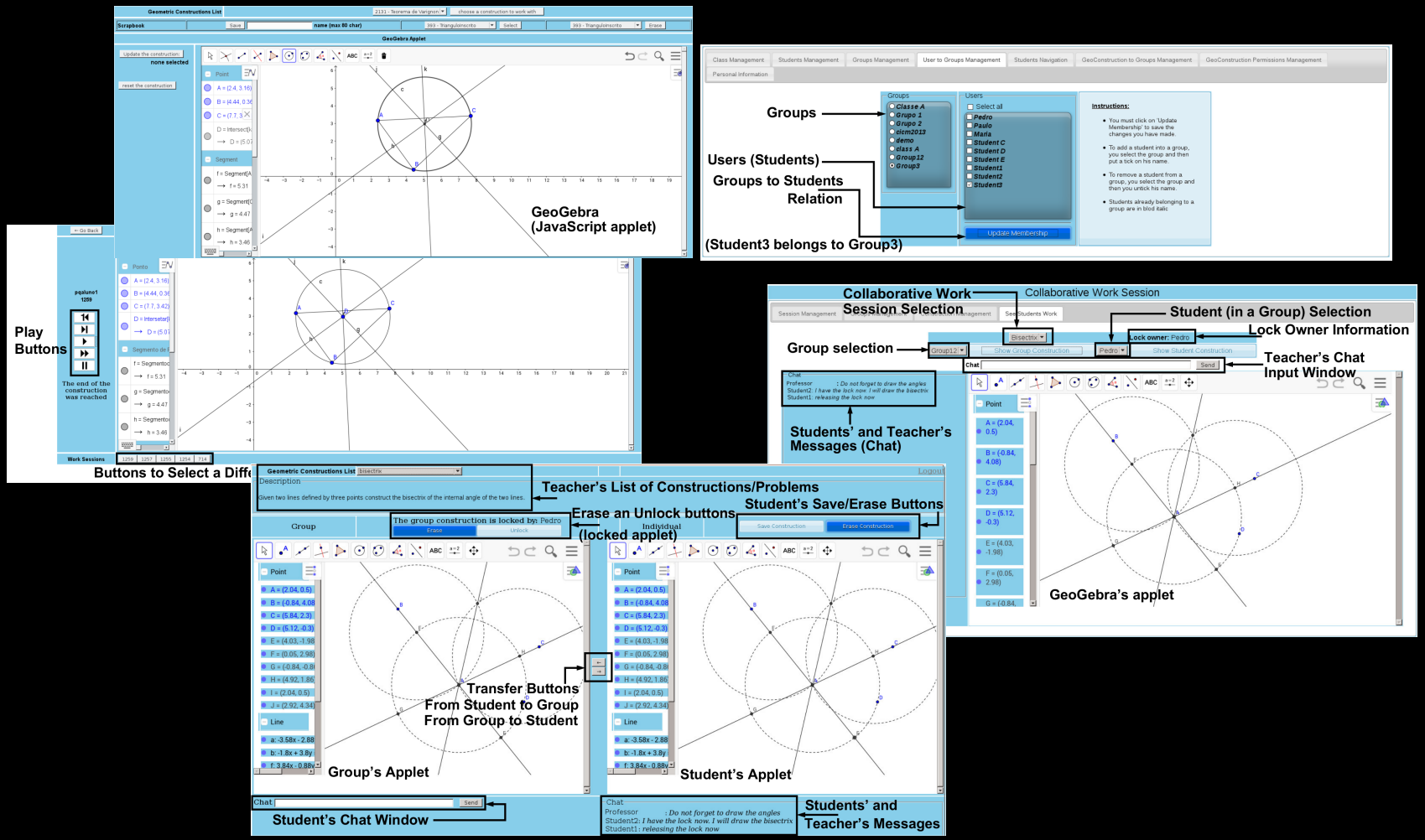
Web Geometry Laboratory (WGL)



http://hilbert.mat.uc.pt/WebGeometryLab/

Thousand of Geometric problems for geometric Theorem Provers (TGTP)

TGTP - Thousand of Geometric problems for geometric Theorem Provers

Documents/Help | Problems List | Workbench | Downloads | Logout

Problems List | N. rows 10 | Page 1 of 24 | 235 Problems | Home Pg Up Pg Dn End | Search by Name | reset to default values | Geometric Search

235 Problems

Queries: text and Geometric

Add a new Problem

Id	Name	Short Description	N. Proofs/N. Attempts		
GEO0281	Adam s Circle	Assume the incircle of triangle ABC touches the sides BC, AC and AB in points D, E and F respectively. The lines AD, BE and CF meet at the Gergonne point G of the triangle DEF is known as Gergonne triangle (and also contact triangle) of triangle ABC. Suppose three lines are drawn through G parallel to the sides of the Gergonne triangle. These meet the sides of triangle ABC in six points P, Q, R, S, T and U. Show that six points are concyclic. Moreover, the circle they lie on is centered at the incenter.	0/3	See details	Update
GEO0227	Brahmagupta's Theorem	In a cyclic quadrilateral having perpendicular diagonals, the perpendicular to a side from the point of intersection of the diagonals always bisects the opposite side.	1/3	See details	Update
GEO0268	Butterfly theorem	P1, P2, P3 and P4 are four points on circle k with a center O. M is the intersection of P1P3 and P2P4. Through M draw a line l perpendicular to OM, meeting P2P3 at X and P1P4 at Y. Show that MX congruent with MY.	1/3	See details	Update
GEO0013	Centroid Theorem		2/2	See details	Update
GEO0001	Ceva's Theorem		2/2	See details	Update
GEO0369	Chou 1994 Example 1	In triangle ABC, let F the midpoint of the side BC, D and E the feet of the altitudes on AB and AC, respectively. FG is perpendicular to DE at G. Show that G is the midpoint of DE.	1/1	See details	Update
GEO0328	Chou 1994 Example 10 (Miquel Point Theorem)	(Miquel Point Theorem) Four lines form four triangles. Show that the circumcircles of the four triangles passes through a common point.	0/1	See details	Update
GEO0374	Chou 1994 Example 100	ABC is an equilateral triangle. Produce AB to D such that BD = 2 AB. F is the foot of the perpendicular line from D to BC. Show that AC is perpendicular to AF.	0/1	See details	Update
GEO0375	Chou 1994 Example 101	The two tangents to the circumcircle of ABC at A and C meet at E. The mediator of BC meet AB at D. Show that A, O, E and D are cyclic.	0/1	See details	Update
GEO0372	Chou 1994 Example 11 (Nice Point Circle Theorem)	(Nine Point Circle Theorem) Let the midpoints of the sides AB, BC and CA of triangle ABC be L, M and N and AD the altitude on BC. Show that L, M, N, and D are on the same circle.	1/1	See details	Update

TGTP support the testing and evaluation of geometric automated theorem proving systems.

WGL Meets TGTP

? Should they be put to work together ?

? How can the two systems be put to work together ?

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- The *WGL* user will have an immediate access to a database of geometric conjectures and its automatic proof attempts (**Formal proofs in a Learning Enviroment**)
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? How can the two systems be put to work together ? **Tasks to make it possible:**

- search mechanisms
- taxonomy of geometric problems
- common formats for geometric information interchange

Should They be Put to Work Together ? — Yes !

- The *WGL* $\longrightarrow$ *TGTP*
  A large set of geometric constructions with the possibility of browsing the constructions, exploring conjectures and proofs about those constructions.
- The *TGTP* $\longrightarrow$ *WGL*
  Enlarge the users base of *TGTP*: teachers, and eventually students, could submit new conjectures.
  High-school teachers, and students, will contribute problems close to the geometric subjects they are studying.

The interconnection of the two system, *WGL* and *TGTP*, will reinforce each other.

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- more comprehensive textual search (MySQL Full-Text-Search)
- geometric search mechanism

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Like in any other 'shop' adapting the queries to the 'consumer'

Geometric Information Interchange

WGL uses *GeoGebra* as 'in-house' Dynamic Geometry System (DGS), so, the constructions are kept in *GeoGebra*'s format.
TGTP uses the I2GATP common format to store the problems in its database.

The I2GATP format is an extension of the I2G (Intergeo) common format.
The I2GATP library is an open source project to support the I2GATP common format.
filters from(to) DGS/GATP $\longleftrightarrow$ to(from) I2GATP

Future Work and Conclusions

Instead of a giant (heavy and difficult to use and maintain!?) tool, trying to cover all, the interconnection of specialised tools seems much more promising.

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- *Current Status of the I2GATP common format*, Pedro Quaresma, Nuno Baeta, in F. Botana and and Quaresma, Pedro (Eds.), ADG 2014, LNAI 9201, pp. 169-181. Springer, 2015.

Thank You