

Brazilian Contest Infrastructure: BOCA and Maratona Linux*

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Since 2004, programming contests of ICPC within Brazil are made in a two-phase competition. Because of the continental size of Brazil, a first phase is run all over the country, qualifying the best teams to compete together in a single location during the second (and final) phase. This idea is mirrored on the successful model of the worldwide ICPC, where teams compete on regional contests for slots in the grand world finals. Like in the worldwide ICPC, the competition within Brazil counts on the local organizers around the country to run their contests with certain independence as long as the official rules are respected. Although each local site runs its competition independently (for example, the programming environment and the submission systems are controlled locally), the problem set and test cases are prepared by a unique committee and distributed to all sites. Hence, all the sites run their contests in the same day, almost at the same starting time, and local chief judges keep an online communication channel to discuss possible doubts about the problem set. Furthermore, the local sites are not demanded to use the same systems, but are obligated to provide equal conditions to all teams within the same site. The slots to the Brazilian finals are allocated according to the size of the sites and the performance of the schools in the previous year (medals are given to best teams, and such medals guarantee a slot to the site where the awarded school competes). In this way, slots to the finals are allocated to sites, and local teams compete within the site to be eligible to the finals, avoiding problems of distinct conditions usually inherent of comparing teams that compete in distinct sites.

In order to provide an easy way to run a contest (besides the problem set, which is also done as mentioned), we have developed *BOCA*, an administration system for programming competitions based on the ICPC rules, and a linux distribution based on virtual machines, known as *Maratona Linux* [1]. The linux distribution is provided with a simple step-by-step guide that enables the system

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personnel to configure it as a team machine, a judge machine, or even a server for the local contest. Hence, it is ensured that all teams, judges and server contain the same set of editors, compilers, etc, and with the exactly same configuration and version. BOCA, the contest administration system, also contains step-by-step configuration instructions to set up the contest (installation is not required as it is already included in the linux distribution), and technical support for the local sites is provided.

In 2010, we begin to provide a web site where users can create and run their own competitions, for example, to train for the ICPC. In this web site, BOCA is able to replay previous Brazilian competitions (which we have collected during the last seven years) so any user or team of users can create a simulated contest based on such past contests. They are virtually competing together with the teams that participated in the selected contest just as if the contest was running in the present moment, that is, updates of the scoreboard, clarifications, balloons, etc, appear to the user in the same time that they appeared during the past real contest, given the feeling of a participation in one of the past Brazilian semi-finals or finals.

In summary, the goal of this presentation is to comment on our experience of running dozens of local contests within Brazil during the past years and to describe the features of BOCA and Maratona Linux used by them.

References

- [1] C. P. de Campos and C. E. Ferreira. BOCA: um sistema de apoio a competições de programação. In *Workshop de Educação em Computação*, pages 885–895, Salvador, 2004. BOCA: A Support System for Programming Contests (Brazilian Workshop on Education in Computing).