

MOTOR optimization contest 2020

Rules

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1 General points

MOTOR Optimization Contest is a free open competition in developing algorithms for a real-world scheduling problem. The problem statement, input data, and auxiliary source code are provided by GTS¹ Russian Research Team, Huawei Technologies Co., Ltd. Participants are allowed to compose teams with not more than 3 members. One person may not be a member of more than one team.

2 Workflow of the contest

A participation in the Contest starts from the registration process. The list of registered teams with their current scores would be shown on the monitor during the competition.

The Contest is divided into preliminary stage, qualification, and final stage. In the preliminary stage, the teams are supposed to clarify the statement of the problem and develop basic algorithmic approaches for it. During the qualification, the teams send solutions obtained by the algorithms developed. These solutions are evaluated in a manner that stimulates the competition by encouraging the teams to reveal their progress. On the final stage, additional test instances of regular size would be provided to finalize the scoring of the algorithms. Three teams with the highest scores become the winners of the Contest.

2.1 Registration

A team must fill the registration form. After the registration, the team is placed in the contest monitor, and a contact person from the team is invited to a Slack chat where the problem statement and organizing questions are discussed. All the details about submitting solutions would be given after the registration as

¹Global Technical Service Department

well. Notice that a team can be registered at any stage of the Contest until the competition is finished.

2.2 Preliminary stage

Lasts until 22 of March. The preliminary stage is organized to let the teams make preparations and enter the qualification stage on the go. The submissions of the participants are not evaluated at this stage.

2.3 Qualification stage

Lasts until 7 of June. The teams submit solutions obtained by their algorithms via e-mail. Twice a week, on Thursdays and Sundays, the solutions are evaluated, and the teams get *leadership points*. At the end of qualification, the teams get *rank points* for each test instance. For more details about scoring, see 3. The organizers may introduce additional instances with limited submission time during the stage.

2.4 Final stage

Lasts until 21 of June. At the final stage, the teams are provided with real-world size instances to perform fine-tuning of their algorithms. At the end of the stage, a batch of instances would be given to the teams. The submission time for solutions is tight to evaluate both the rate and the quality of algorithms. Based on the sum of scores obtained at the qualification and final stages, the teams are ranked, and the top three teams win the Contest.

3 Scoring

During the qualification stage, on Thursdays and Sundays, solutions sent by the participants are evaluated by computing the corresponding value of the optimization criteria. A team that finds a currently best solution for some instance become a leader for that instance. For each instance, a team staying a leader for that instance for several submissions in a row gets 1 leadership point for each week of leadership (two consequent submissions). There may be several leaders for an instance simultaneously.

At the end of a stage, the best submissions of each team are ordered according to the value of the optimization criteria. For each instance, a team gets $\max(0, C - N)$ rank points, where C is a cost of the instance, and N is a number of teams that provided solutions better than the team's one. On the qualification stage, $C = 5$ for all the instances, and, for the final stage, $C = 10$.