"KEGELRING - QUADROx2"
ROBOTS CONTEST ORDER

Age of participants: from 9 years up to 21 years.
Team: 2 participants.
Robots: autonomous robots.
Equipment: any platform, any parts of the constructors, including those made by yourself.
Programming language: at the discretion of the team, without limitation.
Procedure for the conduct of competitions: by turn, according to the draw.

1. Requirements for Robots
1.1. Dimensions (width x length) of robots shall be 200x200 mm, height shall not be regulated, robots design during the contest shall remain intact.
1.2. Weight of robots shall be unlimited.
1.3. Robots shall not contain any metal parts (except batteries), special devices for capturing or overturning of skittles - manipulators, pneumatic components, acoustics, vibration and other, robots only work with their body.
1.4. Body of a robot shall not have sticky substances on it. In contact with the test A4 piece of paper, a robot must not be able to pick it up and pull it along.
1.5. The contests shall be held for self-contained robots only.

2. Requirements for Skittles
2.1. Skittles shall have 12cm of height, diameter of 7cm, and weight of not more than 50g.

3. Requirements for the Ring
3.1. The ring shall be a white circle with a diameter of 150 cm, the border line shall be marked as a black circular ring of a 50mm width.
3.2. The circle may have 16 yellow marks for placing of skittles.
4. The Rules of the Contest
4.1. Competition conditions consist in pushing all the pins of white color, located in the ring beyond its limits for the shortest time. In so doing, it shall be allowed for the robot to move beyond the ring line for no more than 5 seconds, otherwise the attempt shall be considered lost.
4.2. Before start, a robot shall be placed in the center of the ring on the appropriate mark.
4.3. All the robots shall be located in the same position.
4.4. The rules for the skittles arrangement:
4.4.1. Numbered on tops skittles shall be put on the ring (16 pieces), and then eight of them shall be removed by lot. Of the remaining - four skittles shall be replaced with black ones, by lot as well.
4.4.2 The skittles shall be arranged in the same order for all participants in the first attempt, drawing of lots for skittles arrangement shall be held again in the second attempt.

4.5. The robot should push two white skittles in the inner circle and two black skittles in the outer circle (along the black line) out of the ring. The time allotted is 2 minutes.

4.6. If a black skittle is pushed out, penalty time shall be accrued (10 seconds in addition to the time of pushing out).

4.7. The skittles of outer circle shall be put at 8-10 cm from the edge of the circle line, the skittles of the inner circle shall be at a distance of 40-42cm from the edge of the circle line. If judges allow it, the robot operator can themselves adjust the skittles positions according to the requirements before the start.
4.4. During the contest, the judge shall count a skittle pushed out in case of absence of any part of it in the inner circle of white color, including, when a skittle is on the black line.

4.5. When re-rolling of a skittle in a circle after pushing it out, the judge shall remove it.

4.6. The judges' decisions are not to be discussed, the objections are not to be declared.

4.7. The appeal shall be sent to the Organizing Committee before the end of this type of contest. In the absence of representatives of the Organizing Committee, the appeal shall be sent to the judge of the contest.

5. **Requirements for Robot Operators**

5.1. After the start signal, team members shall not be allowed to touch their robot, the ring or skittles. Any remote participation in robot operation, the control from a PC or by other means shall be forbidden. Upon detection of such, a team shall be disqualified and removed from the contest.

5.2. A manifestation of disrespect to the judge and / or the opponent, expressed in writing, orally or otherwise shall be considered a violation. In case of abusive behavior, team members shall get the first warning, repeated abusive behavior may cause disqualification of the team.

6. **Deciding the Winner**

6.1. To determine the best time in the "Kegelring" category, two attempts shall be given to teams (the number of attempts can be varied by the decision of the judges, but not fewer than two). The attempt with the shortest time and the maximum number of skittles pushed out shall be accounted, after all the attempts.

6.2. The team with the shortest time of pushing out the skittles shall be declared the winner. If none of the robots copes with a full cleaning, the judges shall consider the time of the teams with the highest number of skittles pushed out. The team with the shortest time shall be declared the winner.

6.3. If the time of the attempts (5 minutes) is exceeded, the counted number of skittles shall be determined by the remainder of white and black skittles that were pushed out.

**CONTEST ORDER FLEXIBILITY**

1. The flexibility of the rules can be manifested with changes in the number of participants in the competition, which may have a minor effect on the content of the regulations, but at the same time, its basic concepts must be observed.

2. Contest organizers may make changes or exceptions to the order before the event, after which they shall be constant throughout the event.
3. Participants shall be informed about changes or cancellation of the contest order in advance (no later than 15 minutes) prior to the contest.
4. Adjusted rules shall remain unchanged during the contest.

LIABILITY

1. Teams and competitors are personally responsible for the operability and safety of the robots, as well as they are responsible in accordance with the legislation of the Republic of Kazakhstan for any accidents caused by the actions of team members or their robots.

2. The organizers are not liable in the case of an accident or an emergency caused by the actions of team members or their equipment.

LINKS TO THE RESOURCES USED

1. www.robofinist.ru
2. www.myROBOT.ru
3. robolymp.ru
4. www.rus-robots.ru