2019年度通訊博物館電子裝置製作比賽
Museu das Comunicações – Concurso de Construção de Dispositivos Electrónicos, 2019
Communications Museum - Electronic Device Construction Competition, 2019

Supplementary Rules – Junior and Senior Categories

Construction requirements: There is no restriction on the materials used, but ready-made device is not allowed. The device should consist of two parts: the **"controller"** and **"gaming module".**

Functions: The "controller" is used to control the "gaming module" to distribute objects into specific areas.

Weight & Dimensions: There is no restriction on the weight. The "gaming module" should not exceed 30cm x 30cm x 60cm (height). There is no restriction on the "controller".

Competition Objects: All objects for the competition should be prepared by the participants. The quantity should not exceed 24. Each object should be within the size of 6cm x 6cm x 6cm (as measured after they are distribute on the ground) and each should weigh between 20g to 100g. The acceptable variance in the weight of objects is within 10%. Adhesive materials are prohibited. The objects should not be thrown to higher than 280cm above the ground.

Restriction: The device must use direct current of 24V or below. The organizer will only provide normal household electric supply. Batteries and adaptors (must be less than 100W) should be prepared by the participants.

Competition System: The competition will be divided into junior and senior sections, each with 2 phases – The "Preliminary Competition" and "Repechage". The scoring for the "Repechage" includes both the "Competition Stage" and "Presentation Stage".

Preliminary Competition: The sequence of competition will be pre-determined by lucky draw.

Pitch: The *scoring zone* is around 180cm x 180cm, divided into 9 squares, each with sides of 60cm. The *device zone* is around 90cm x 180cm. There is a *buffer zone* of around 30cm x 180cm between the *scoring zone* and the *device zone*, inside is a fence with height not higher than 20cm. A black mark in the *device zone* is identified as the position of participants in the Secondary Group to place their devices. Please refer to Figure 1.

Competing Method: Within the time limit, the participants should use their devices to throw their competition objects into the 9 areas of the *scoring zone*. At the end of the competition, the competition objects on each specific area in the *scoring zone* will score 1 point. If more than one object falls on the same specific area, the participants will still score only 1 point. The 8 teams that earn the highest scores will enter the "Repechage". If the teams obtain the same scores, the team that uses less quantity of objects will win. If the quantity of objects used is also the same, an extra round of competition will be carried out, in which rules will be announced before the begin of the extra round

Flow of Competition: The competition time is limited to 6 minutes. The quantity of competition objects of each team that can be used is limited to 24. Before the competition, the participants should place their devices on the specific area in the *device zone*. More than 1 object can be loaded on the device, but only 1 object can be thrown at one time. After the competition has begun, the participants can use the "controller" to control the "gaming module" to throw the objects. After each throwing, the participants can load the other competition objects onto the "gaming module" manually or automatically for another throw.

Junior Secondary teams can change the location, throwing direction, angle and strength by hand or by the use of the "controller" during the competition. However, throwing action itself must be done by the "controller".

In **Senior Secondary** teams, except the loading of the competition objects onto the "gaming module" can be done by hand during the competition. All movement, throwing setting as well as throwing action of objects must be controlled by the "controller".

Repechage: The sequence of competition follows the results of the Preliminary Competition. The teams with the highest rank will be the last to compete in the Repechage. The sequence for the "Presentation Stage" will be determined by lucky draw.

Pitch: The *scoring zone* is around 180cm x 180cm. The X and Y axes are marked with letters A to L and numbers 1 to 12 respectively. It forms a total of 144 squares, each approximately 15cm x 15cm. The *device zone* is around 90cm x 180cm. There is a *buffer zone* of around 30cm x 180cm between the *scoring zone* and the *device zone*, inside is a fence with height of not higher than 20cm. A black mark in the *device zone* is identified as the position of participants in the Secondary Group to place their devices. Please refer to Figure 2.

Scoring Blocks: The scoring blocks are formed by various squares of 15cm x 15cm each. Each scoring block represents different score points (see Table 1). The locations of the scoring blocks are determined by lucky draw. There is a triangle on one of the squares of each scoring block. It is used to locate the position of the scoring block after the lucky draw. In case there is overlapping or insufficient space to put the scoring blocks, their positions will be re-drawn.

Competing method: The "Repechage" is divided into two stages.

1) **Competition Stage**: The locations of the scoring blocks will be determined by lucky draw. Within the time limit, the participants will throw the competition objects into the pitch. At the end, the quantities of competition objects landed on the scoring blocks will determine the points gained (see Table 1). Points will be calculated for only 1 time for each scoring block. The higher the scores, the higher the ranking of the team in that round of competition. For teams that have the same scores, the team with more competition objects landed on the scoring blocks will win. If the numbers of competition objects are still the same, the ranking of their Competition Stage will be count as the same. After the Competition Stage, the teams will enter the Presentation Stage.

2) **Presentation Stage**: The participants should prepare their materials and information in advance, for example, script, PowerPoint, props, electronic device, etc. They will give a thorough presentation of their devices within the time limit. The judging criteria include: design (30%), creativity (25%), art and craft (25%), presentation skills (20%). After this stage, the teams will be ranked according to their scores. The higher the scores, the better the ranking in the Presentation Stage.

In the end, the final ranking of the teams will be obtained by combining the number of ranks in the two stages of the "Repechage". The team with the lower total number of ranks will win. If the teams have the same final ranking, their ranks in the "Competition Stage" will be counted. The team that has a higher rank in the "Competition Stage" will win.

Flow of Competition:

1) **Competition Stage**: The competition time is limited to 10 minutes. The quantity of competition objects of each team is limited to 24. Before the competition, the participants will determine the locations of the scoring blocks by lucky draw, and they should place their devices on the specific area of the *device zone*. More than 1 object can be loaded on the device, but only 1 object can be thrown at one time. After the competition has begun, the participants can use the "controller" to control the "gaming module" to throw the objects. After each throwing, the participants can load the other competition objects onto the "gaming module" manually or automatically for another throw.

Junior Secondary teams can change the location, throwing direction, angle and strength by hand or by the use of the "controller" during the competition. However, the throwing action itself must be done by the "controller".

In **Senior Secondary** teams, except the loading of the competition objects onto the "gaming module" can be done by hand during the competition. All movement, throwing setting as well as throwing action of objects must be controlled by the "controller".

2) **Presentation Stage**: After the Competition Stage, the participants will enter the Presentation Stage. Before it begins, the teams will determine their sequence by lucky draw. The representative should finish introducing their device with 6 minutes. Then a Q&A section will be held in which representatives have to answer questions from the judges. Finally, the judges will decide their scores.

After the competitions, the combined scores of the "Competition Stage" and the "Presentation Stage" will give the final ranking of the teams.

Judging Criteria:

1) If an object is stacked on top of another object without completely touching the floor, that object is considered to be outside the pitch.

2) No part of the "gaming module" is allowed to enter the vertical space of the *scoring zone*. When the device is throwing the objects, if any part of the "gaming module" has entered the vertical space of the *scoring zone*, the competition object thrown for that time will be considered invalid and forfeited.

Preliminary Competition: If a competition object touches the borders of two or more areas inside the *scoring zone*, it is considered to score one of the specific areas. The score that is more favorable to the participants will be counted at the end.

Repechage: If a competition object touches the borders of two or more scoring blocks inside the *scoring zone*, it is considered to be within one of the blocks. The score that is more favorable to the participants will be counted at the end.

***Timeout and Maintenance*:** No timeout is allowed during the game. Teams can repair their "gaming modules" at any time with permission from the judge. During the maintenance, the competition will continue. After the maintenance, the teams for Junior Secondary can place their "gaming module" back into any position of the *device zone* to continue with the competition. For Senior Secondary teams, the "gaming modules" have to be placed at the specific location of the *device zone* before they can continue with the competition.

Violation of rules: Teams will be disqualified depending on the severity of violations, as regulated below:

1. Intentionally causing damage to the pitch or objects during the competition.
2. Touching the device or objects during the competition without pre-approval.
3. Dimensions of the device do not meet the specifications listed in the rules and regulations.
4. Maliciously blocking other teams and their devices from playing the competition.
5. Using devices that have not been inspected by the organizer.
6. Using power supply that does not meet the specifications listed in the rules and regulations.
7. Team members enter the restricted pitch area during competition without permission.
8. Disobeying the instruction of the staff, interfering or stalling the competition.
9. Violations, insulting or abusive words of participating teams.
10. Violation of the principles of fair play.

Others

1. All teams should pay attention to electrical safety.
2. Maintenance tools shall be prepared by the participating teams. The organizer shall not provide them.
3. Participants are allowed to use the test pitch at the museum during opening hours before the competition.
4. Should any dispute arise, the decision of the organizer shall be final.
5. Final decisions shall be made by organizer should any unexpected situations happen during the competition.
6. In case of any discrepancy in the different language versions of the regulation, the Chinese version shall prevail.

Figure 1: Bird's eye view of competition pitch

(Preliminary competition)

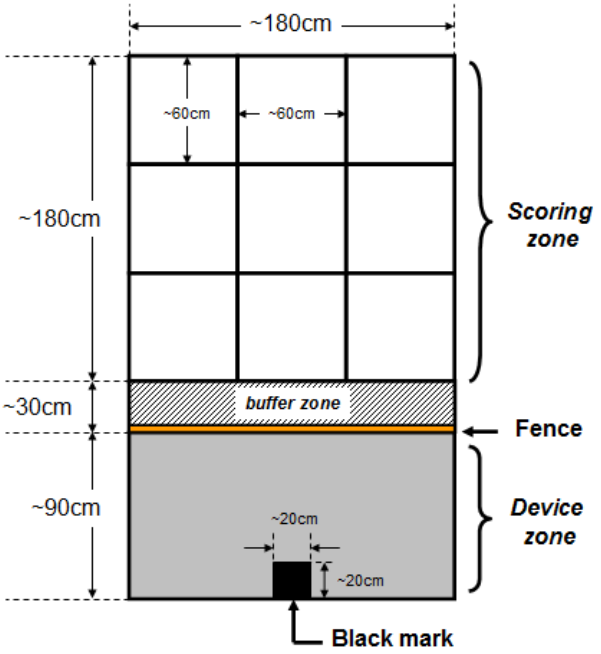


Figure 2: Bird's eye view of competition pitch

(Repechage)

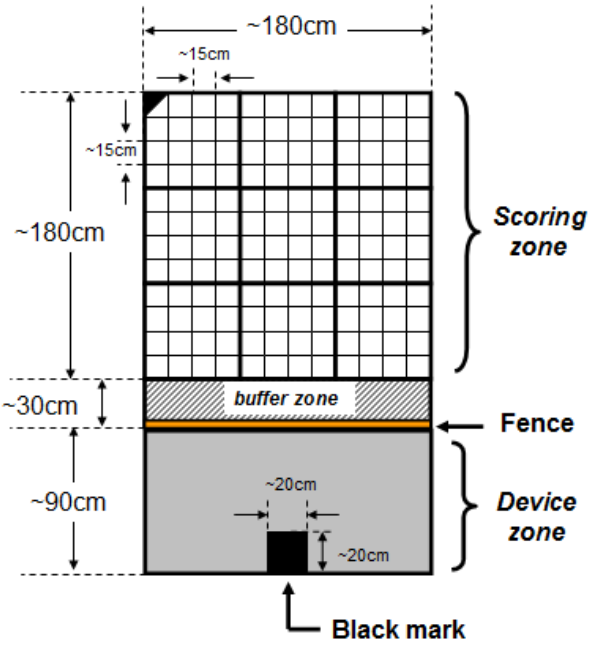
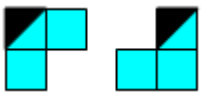
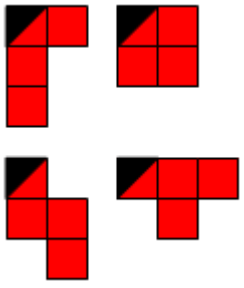
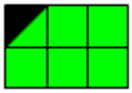


Table 1: Scoring blocks diagrams and their respective scoring points

Samples	Quantity of objects required on the scoring blocks in order to score	Points
	2	8
	2	6
	1	3
	1	2