MAKEX

V2.0

2022-2023 Makex Robotics Competition

EVENT GUIDE

MAKEX INSPIRE
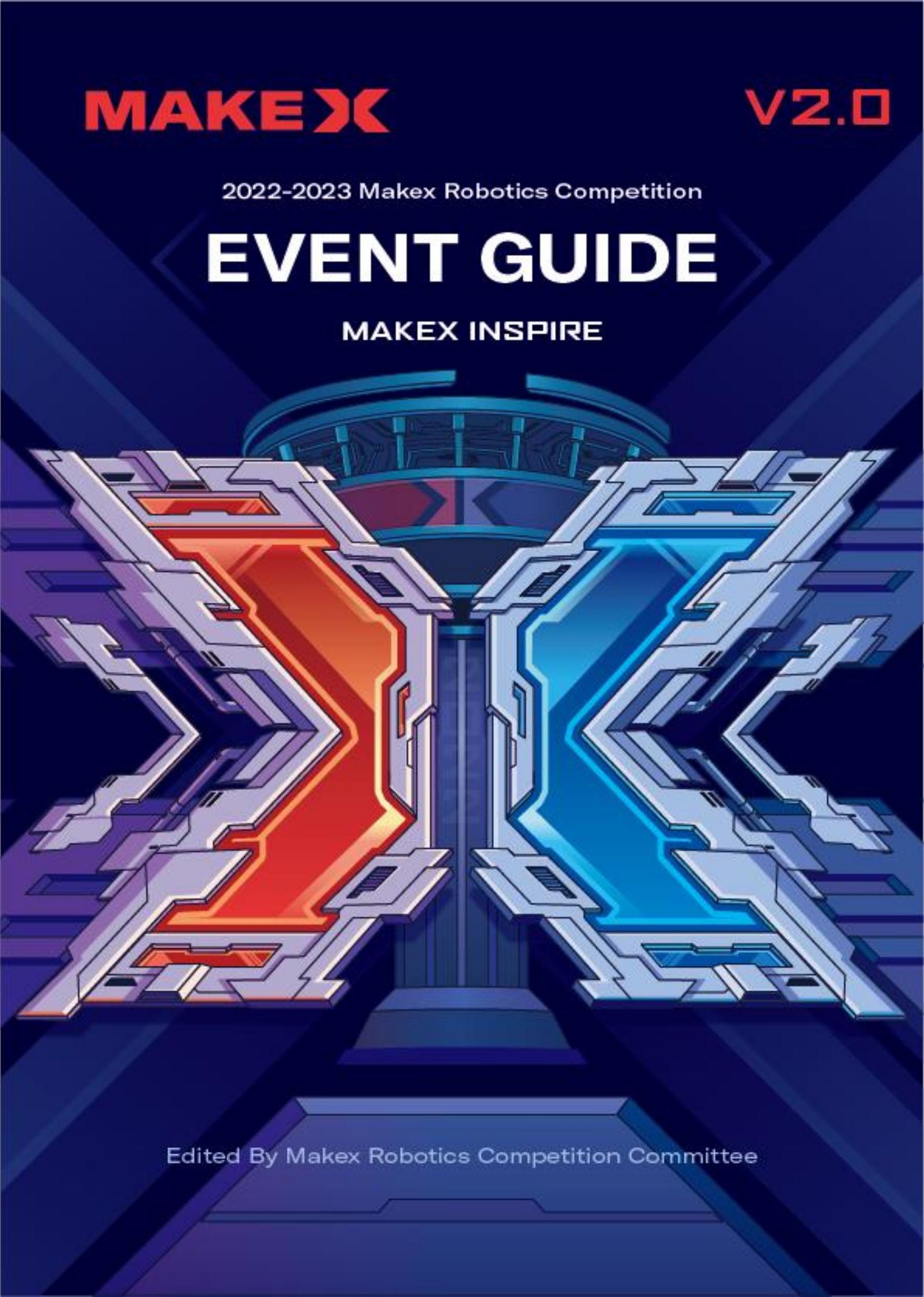
Updates:

Date	Version	Modifications Record
2021.09	1.0	Fruit Wonderland Activity Manual First Publish.
2023.01	2.0	2022-2023 MakeX Inspire Fruit Wonderland Activity Manual Publish ● Update the competition season

CONTENTS

1.   Activity Introduction

1.1 Activity Background

2022-2023 MakeX Inspire is a STEAM activity for kids that are at the age of 4-7. The theme of the activity is Fruit Wonderland.

As the new industry that combines traditional agriculture and artificial intelligence, smart agriculture not only improves the efficiency of farming, but also solves the problems of pests and environmental damage. In the future, the robot will act as the best helper for farmers to catch pests and collecting fruits. We believe that the farmland will surely be better under the development of science and technology.

1.2   MakeX Spirit

Creativity: we advocate curiousness and innovation, encouraging all contestants to create unique high-tech works with their talent, and challenge themselves for continuous progress!

Teamwork: we advocate solidarity and friendship, encouraging all contestants to develop a sense of responsibility and enterprising spirit, and sincerely working with their partners for win-win development!

Fun: we encourage contestants to build a positive, healthy mindset in the competition. Enjoy the journey and grow in the process.

Sharing: we encourage contestants to have an open mind as a maker and share their knowledge, responsibility, and joy with everyone, including their teammates and competitors.

1.3 Activity Introduction

MakeX Inspire is a multi-task, single player event that requires the kid to complete the entire activity alone. Parents are not directly involved in the activity, but they are responsible for paying attention to the official notice of the activity and supervising the safe operation of the kids during the activity; At the same time, the staff will assist the kids to put the state

of the model props and record the task score.

The activity is divided into two tasks, with a total length of 7 minutes. The first 4 minutes is the mission of catching pests, and the second 3 minutes is the mission of transporting fruits. The kid needs to use the coding card to program the route instruction on the spot, and use the tap-pen-controller to control the robot to move on the specific map, so as to plan the optimal path to complete the task as far as possible to obtain the task score.

MakeX Inspire aims to Inspire children's interest in programming learning, improve their multiple intelligence, exercise their ability to think independently and build their confidence in learning through interesting robot interaction.

2. Activity Content

2.1 Activity Requirements

Participants: One kid and one adult

Ages: The kid must be aged 4-7, and the adult shall be over 18 years old.

Participation requirements: The adult does not directly participate in the activity, instead they are responsible for guiding and supervising the kid in the whole process of activity. The kid controls the robot by himself. The staff assists the kid to place the props and record scores of the missions.

Recommended equipment: It is recommended to use mTiny. If you need to buy equipment, please email makex@makeblock.com, or contact local sales personnel.

Identification requirements: The kid's name should be confirmed before start. Kids are encouraging to decorate robot by costumes, stickers etc., and also kids can bring their flags, posters, badges etc., to show their characters and spirit.

2.2 Arena

The site of MakeX Inspire children's orchards is a rectangular map of 861mm X 1107mm, consisting of 63 squares (7 x 9 squares). It is recommended that the organizer lay 1200mm x 2000mm flat, hard floor mats or other objects under the map as the operation area of the kids. The whole activity site mainly includes the starting area, operation area and collection area.
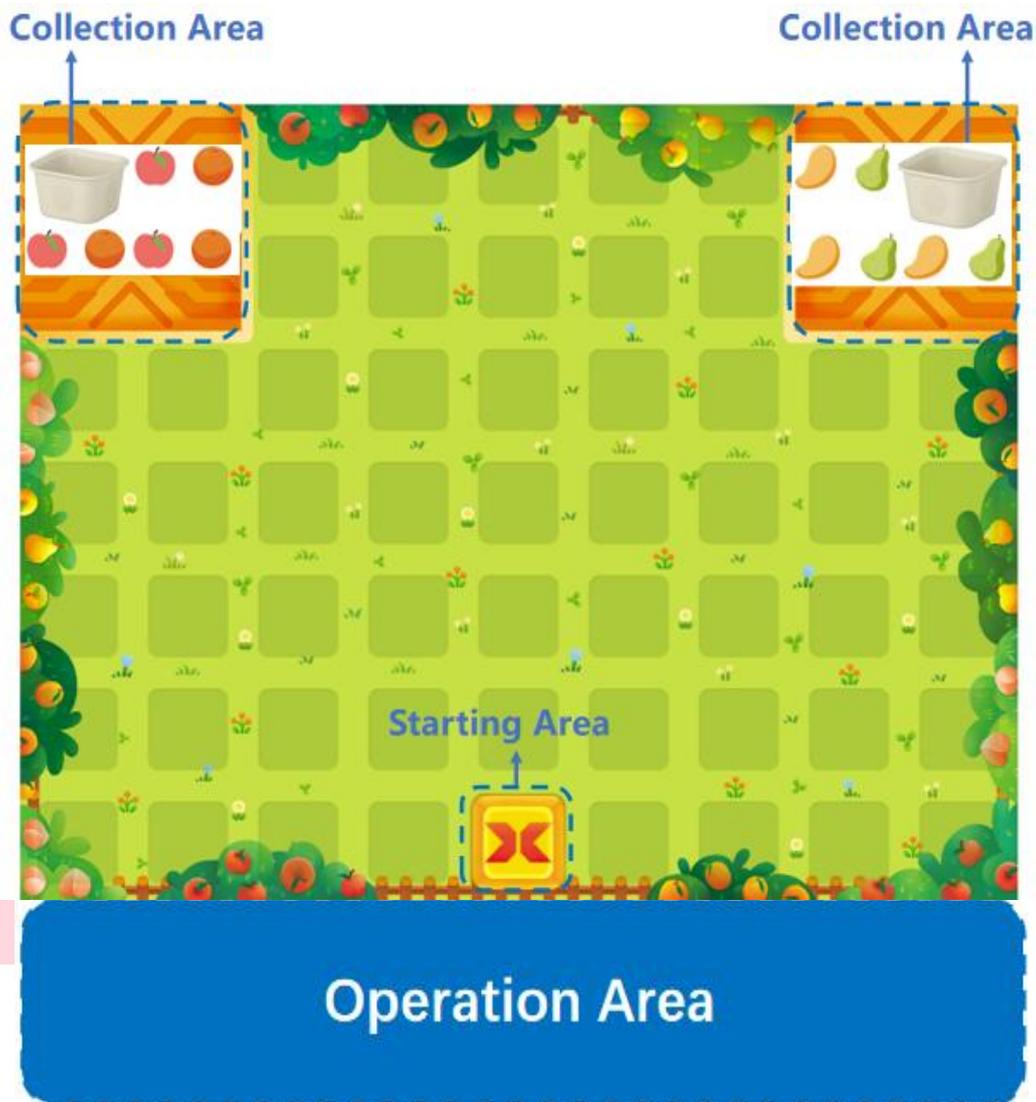
Figure 2.2-1 The Arena for MakeX Inspire

The description of main areas:

Starting Area

The whole activity arena has only one starting area, which is as shown on Figure 2.2-2 the arena for MakeX Inspire.

The starting area edge length is 105mm *105mm, as shown in Figure 2.2-2 the starting area.

Figure 2.2-2 The Starting Area

Operation Area

There is only one operation area, laid with the ground mat. Kids are only allowed to program the robot in the specific zone by using tap pen controller and coding card.

The operation area is the same length as the map (1107mm), while the width can be adjusted according to the actual size, as shown in the figure below.

Figure 2.2-3 The Operating Area

Collection Area

There are two fruit collection areas, respectively located in the upper left and right corners of the map with an edge length of 260mm *260mm, as shown in the Figure 3.4-4 the collection area.

The kids need to place the fruit basket with the fruit's props on the robot in the starting area, and transport it from the starting area to the collection area. The staff will assist the kids to transfer the fruits props to the fruit box in the collection area.
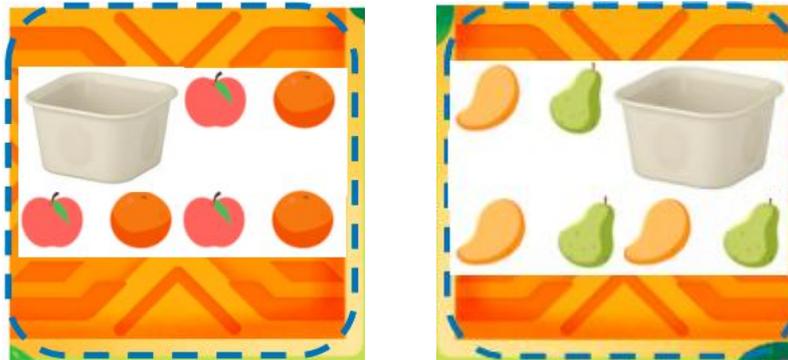
Figure 2.2-4 The Collection Area

2.3 Activity Props

Name	Picture	Quantity
Pest Card		5
Model Fruit Trees		4
Fruit Props		12 (4 of them are spare props)

Fruit Basket		1
Fruit Storage box		2
Mission Card (Pest)		5 Select 1 from 5.
Mission Card (Fruit tree)		Select 1 from 5.
Coding Card		36

Activation Card		2
Calculation Card		2
Acquisition Card		5
Coding Card Slot		4
Direction Control Panel		1

2.4 Activity Process

The adult should pay attention to the official announcements before the event so as not to miss important information. If there is any change in the manual or awards, the official announcement prior to the event shall prevail. MakeX reserves the right to adjust the manual and awards and has the final interpretation of this activity program according to the actual situation.
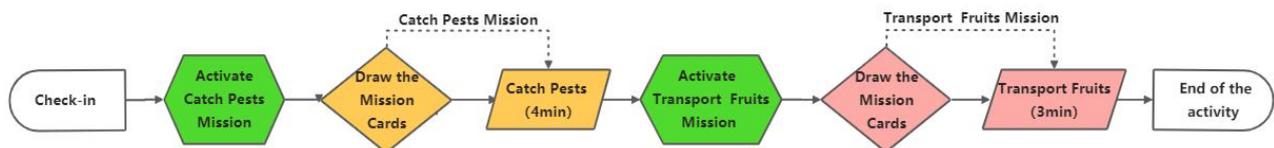
Note: the specific arrangement shall be subject to the official notice of the event.

Check-in

Once the kid arrives at the activity venue, the adult and the kid should bring ID or other valid documents to complete the on-site registration. The adult should show the kid about fire evacuation route, event rundown, activity schedule, activity area and other information needed. The kid can start to prepare for the activity once arrived.

Activate a mission

All missions need to be activated by clicking the corresponding activation card before starting.

Draw the Mission Cards

After each mission is activated, the staff will invite the kid to select one of the five mission cards as the specific mission of the field, and assist the kid to put the model props (pest card/fruit tree) to the corresponding position on the map according to the schematic diagram on the mission card, and paste the fruit basket for the robot.

Pest capture mission

(1) Staff activate the mission; kids draw one mission card and prepare for the activity.

(2) The kid takes position in the operation area, the robot takes position in the starting area, and the staff starts timing for 4 minutes.

(3) Kids observe the position of the pest card on the map and arrange programming instructions to capture the pest route in the slot of the direction control panel.

(4) The kid uses the tap pen controller to click the route capture programming instruction arranged in the slot of the direction control panel in one time. After clicking, press the circular start button on the tap pen controller to make the robot run the route programming instruction automatically reach the position of the pest card in the map to complete the pest capture.

Note: when arranging any programming instruction, the first card must be "calculation card" instruction, and the "acquisition card" instruction must be used in the position of capturing pests to effectively complete the action of capturing pests.

Kids can splice together multiple direction control panel and use the coding card to arrange a programming command that can capture all the pests on the map. Kids can also be arranged multiple routes programming instructions on different locations on the map of pest capture points in time, the kids successfully captured the first insects on the card, may continue to configuration based on the current robot position, and need not to return to the start zone, but the first card of the new route programming instructions must be "calculation card".

Fruit transport mission

(1) Staff activate the task; kids draw one prop card and prepare for the activity.

(2) The kid takes position in the operation area, the robot takes position in the starting area, and the staff starts timing for 3 minutes.

(3) Kids put the direction instruction card into the direction control panel, select the fruit and put it into the fruit basket, observe the location of the obstruction-model fruit tree on the map and plan the route of fruit transportation.

(4) The kid uses the tap pen controller to click the direction command card in the slot of the direction control panel and follow the point to avoid

the obstacles on the map in the process of moving forward -- the model fruit tree, and gradually the remote-control robot will successfully transport the fruit to the corresponding fruit collection area on the map.

(5) The staff will assist kids to transfer the model fruit from the fruit basket to the fruit box in the collection area, and help kids to put the robot back to the starting area for secondary transportation.

End of the activity

A) End of routine

Kids should complete the mission of catching pests and transporting fruits within the specified time, and each mission should not exceed the time specified in the task. The switch from the mission of catching pests to the task of transporting fruits can only be performed once. After the switch, it is not allowed to return to the task of catching pests again. That is, the whole activity ends when the task of transporting fruits is finished.

B) End early

If the kid completes the task in advance within the specified time, the kid can apply for entering the next mission in advance or applying for ending the activity in advance.

That is, during the mission of catching pests, if the kid completes the task of capturing all pests on the map in advance within 4 minutes, he can apply for ending the task of catching pests in advance and entering the task of transporting fruit. The staff should assist the kid to put the robot back to the starting area to prepare for the task of transporting fruit.

When transporting fruit, kid can apply for ending the activity early if they deliver all fruits to the corresponding fruit box in the fruit collection area within 3 minutes in advance.

C) Automatic termination

When the activity time of a single task is exceeded, the single task is automatically terminated by default.

That is, if the kid fails to capture all the pests within 4 minutes, the staff will end the task of capturing pests by default, start to score points for the task of capturing pests, and assist the kid to put the robot back to the

starting area to prepare for the task of transporting fruits.

If the kid fails to deliver all the model fruits to the corresponding collection area within 3 minutes, the staff will end the activity by default.

After finishing the whole activity, kids should leave the activity area under the guidance of the staff and wait for the result announcement accompanied by their parents.

3. Scoring Explanation

3.1 Activity Scoring

Pest capture points

In the pest capture task stage, the number of pests on the pest card successfully captured by the robot is scored, 1 pest =1 point.

Scoring judgment conditions:

(1) Whether the capture is successful

After the kid starts the route programming instruction, when the robot automatically walks to the position of the pest card, there will be obvious changes in digital expression and voice. Then it will judge that the kid has successfully captured the pest on the pest card and calculate the score.

If there is no digital expression change or voice change when the robot automatically walks to the position of the pest card after the kid starts the route programming instruction, then it is judged that the kid has not captured the pest on the pest card and cannot score.

(2) Pest scoring

After the robot successfully captures pests, the staff checks the pest card posted at the location and records the score according to the number of pests drawn on the pest card, that is, the number of pests drawn on the acquired pest card = pest points.

If the kid completes the capture of multiple pest cards within the specified task time, the total number of pests on all acquired pest cards equals the total number of the capture task.

Example: if the kid successfully captures 1 pest on the card, he will get 1 pest point. After starting from the starting area, the player successfully

obtained 3 pest cards in the driving route. The number of corresponding pests on these 3 pest cards was 1, 2 and 3 respectively. Then in the task of catching pests, the total number of pests obtained by the kid was 1+2+3=6 (points).

Fruit transport

In the fruit transport task stage, the number of fruits delivered by the robot to the fruit box in the collection area shall prevail, 1 fruit =1 point.

Scoring judgment conditions:

(1) Whether the delivery is successfully completed

The kid points the direction command card and runs the robot to completely enter the yellow collection area corresponding to fruit types on the map. If the robot has obvious changes in expression and voice when entering the collection area, the kid is judged to have successfully completed the transport and the score is calculated.

If the robot does not fully enter the yellow collection area of the corresponding fruit type, the kid will be judged to be invalid and not scored. For example, if a kid moves an apple into a collection area corresponding to a mango, the move is invalid and no score is scored. Kid s can adjust the route and transport to the "apples & Oranges" collection area in the upper left corner for scoring, or ask the staff to help put the robot back to the starting area to select other fruits and put them into the fruit basket for transportation again.

(2) Fruit score

After the task of transporting fruit, the staff checked the number of fruits in the fruit box and recorded the score according to the number of model fruit in the fruit box in the collection area, that is, the number of fruits in the fruit box = fruit points.

Example: At the end of the fruit transport task, if there are 2 apples in the "apples & Oranges" collection area and 1 mango in the "mango & pear" collection area, the total number of fruits earned by the kid in this fruit transport task is 2+1=3 points.

Single task total score: the sum of points effectively earned by a kid in a single task activity after the deduction of illegal points is removed.

* Total points for pest capture task = Points for pest capture - Points deducted for violation

* Fruit Transport Task Total points = Fruit delivery points - Points deducted

for violation

Full score for single task: in the single task activity, the kid completes all the schematic contents on the drawing task card, and no illegal points are deducted during the activity. The effective score of all the manipulative actions of the robot is regarded as full score for single task.

Penalty points: the penalty points for violation shall be deducted according to the penalty regulations.

Bonus points: the kid will get the bonus points if the kid decorates the robot in any form including but not limited to costumes, hats, and stickers.

3.2 Penalty Description

E01. Before the activity begins, the kid shall place the robot completely in the starting area and make it stationary. The robot is not allowed to run in advance.

For the first violation, the kid will be warned. For the second and further violation, the staff deducts 1 point each time.

E02.Once the activity starts, the kids are not allowed to touch the robot without staff's permission.

For the first violation, the kid will be warned. For the second and further violation, the staff deducts 1 point each time.

E03. When the activity ends, the kid is required to immediately put down the tap-to-code pen and stop operating the robot.

If time out the missions are not finished, the staff will inform the kids to stop controlling the robot. If the kids still control the robots, the kids will be warned for the first violation and 1 point will be deducted for each time if the kids continue to violate the rules.

E04.In the "Catch Pests Mission", kids are not allowed to reuse pest cards. Each pest card can only be used once.

For the first violation, the kid will be warned. For the second and further violation, the staff deducts 1 point each time.

E05.In the "Transport Fruits Mission", the kid shall not knock down the fruit trees when moving the robot. while remotely controlling the robot to

the fruit.

For the first time of knocking down the fruit tree, the kid will be warned, For the second and further violation, the staff deducts 1 point each time.

E06. During the activity, the kids are not allowed to maliciously damage the map or model props.

For the first violation, the kid will be warned. If the kids keep violating, the kids will be disqualified from the activity.

E07. Special Case Description:

a) In the automatic stage, if the robot is out of the map due to the mistake of operating the robot, the staff can assist the kid to take the robot back to the starting area and restart the mission of the pest catch. At the same time, the robot must be restarted in the starting area.

b) In the manual stage, if the kid drops the fruit props on the map or out of the map, the staff can assist the kid to take the fruit props and robot back to the starting area and restart the transport fruits mission. At the same time, the robot must be restarted in the starting area.

It is allowed to reduce the difficulty by reducing the number of pest cards and fruit trees.

* No less than 3 pest cards.

* No less than 2 fruit trees.

4. Awards

Young All-Rounder Award: 8 pest points + 4 fruit points

* Preconditions for winning the Young All-Rounder Award: the kid needs to decorate the robot in any form (including but not limited to, install headgear, wearing clothes, painting patterns, paste stickers and other forms).

Artificial Intelligence Award: 6 pest points.

Best Controller Award: 5 fruit points (include bonus point)

Young Maker Award: If the kids do not win any other awards, they will win the participation Award.

5. Manual Statement

5.1 Supplementary Instructions

In order to ensure the fairness and high-quality participation experience of the activity, MakeX Robotics Competition Committee has the right to update and complement this Activity Manual regularly.

During the activity, all matters not stated in the Activity Manual shall be determined by the organizer.

This Activity Manual is the basis for the activities and the organizer have the final decision during the activities.

5.2 Copyright Statement

MakeX Robotics Competition Committee reserves the copyright of the Activity Manual. Without the written consent or authorization from MakeX Robotics Competition Committee any entity or individual may not reproduce, including but not limited to any network media, electronic media or written media.

Appendix 1. Competition Resources

Participating robots must use the latest version of firmware.
Firmware upgrade package：
https://drive.google.com/drive/folders/1iAGa73RoiJx6l3xoWJY3tz6E5t3cI5
J8?usp=sharing

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