1. 介绍背景

Managing household waste is a remarkably simple way for families to reduce their impact on the environment. Waste management and recycling have many huge benefits for the world. It reduces carbon footprint and recycling reduces the need to manufacture more raw materials which saves energy and resources while reducing greenhouse gas production. Proper recycling reduces the amount of waste that enters landfills as the materials can instead be reused, recovered, or recycled.

1. 介绍问题

When throwing garbage, we need to subconsciously and quickly identify the type of garbage it belongs to and put wastes in the corresponding bin. This makes it difficult to sort waste correctly, especially for young children. It is difficult for children to understand the method of classifying the types of waste according to the waste material. Therefore, guiding children to understand the method of garbage sorting is also an important way to cultivate the habit of garbage sorting from an early age. So how can we let children quickly and solidly remember the classification of daily garbage? Compared with the traditional educational model of remembering the garbage classification to which garbage belongs, games can improve children's learning initiative and enthusiasm. Learning garbage classification by playing a game is the solution we considered.

1. 介绍app，功能

The purpose of our app is for children to learn to sort waste in a playful way. The user group of the application is children, and the main function is garbage classification game.

**For Application’s structure:**

We have three main features are game play, leaderboard view, and user profile manipulation. When turn on the application, we do not restrict users to sign up an account to play the game. However, it is also flexible to change users’ mind.

After entering the application, there will be three interactive functions for users to choose from, they are Game starting, Scoreboard, and User profile.

* For the Game Starting. At first users can choose the difficulty level of the game. We have three game difficulties which are easy, normal and hard, the different levels of difficulty represent whether the types of garbage are easy to distinguish. At this stage the user can also choose to return to the main interface. When the user finishes the game, the application gives the user two options to quit and restart the game. If the user selects the restart option, the user will be asked whether to restart the game with the same difficulty.
* For the Scoreboard. This feature displays the highest scores for all users in descending order. The arrangement of scores enables users to encourage each other to play the game, and they will be more motivated to learn garbage classification through the game. In addition, this page will also display the historical score record of the game played by the user, so that the user can observe his cognitive progress in garbage classification. The user can also choose to return to the main interface at this stage.
* For the User Profile. This feature means that the user could change the password of the account, and they can also log out of the account. This feature will contain the name, location, nickname and other information they used when registering this account. The user can also choose to return to the main menu here.

**For UI Design:**

The target users of this application are children, so our design style base on simple, cute and environmentally friendly. We chose cartoon as the design style and some fresh colors as the main tone of the app. The simple interface design makes it easy for children to understand and use the app even easier. The design style of cute and friendly environment can keep children's interest in using the app.

* For the Game Starting. We use rectangle cards to present garbage that needs to be sorted, and users can drag and drop the cards into the corresponding trash bin. Three trash bins are arranged below in different classifications stipulated by the Brisbane Government. Red means general wastes, yellow means recycle wastes, green means green wastes. Because the user group is target on children, the whole interface is designed with the main idea of making it easy for users to understand the gameplay.
* For the Scoreboard. In this feature, we sort the highest scores of all linked players in descending order, and use a crown-like icon to highlight the users with the highest scores. The rank and score to which the current user belongs will also be highlighted.
* For the User Profile. Because considering that the target audience used is children, which is different from the classic mailbox and mobile phone number registration, we choose the method of name and password for registration. In addition, we try to keep the overall interface in a simple.

Whether it is from sustainable development or ethics, it is very important for children to develop good garbage sorting habits. Hoping our application could make children easy to entertain and develop good garbage sorting habits, and contribute to the cause of environmental protection contribute.