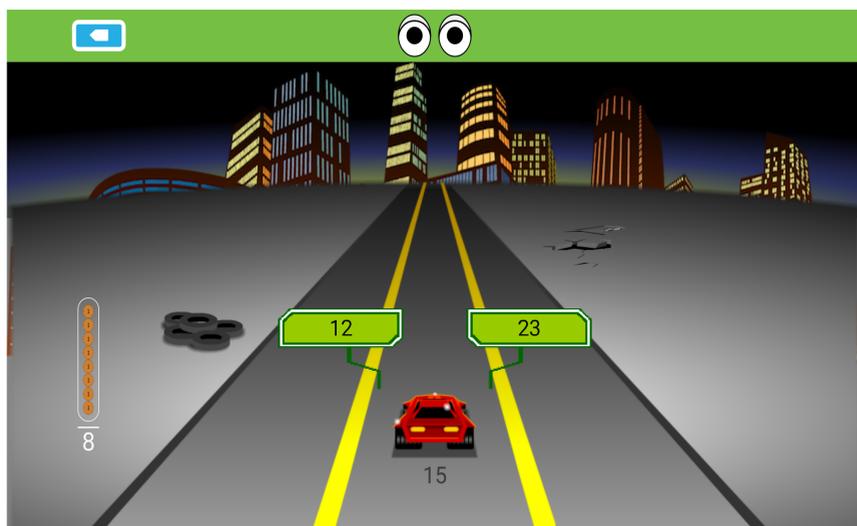


### Introduction

RoboTutor is Carnegie Mellon’s team in the Global XPRIZE Learning competition. The goal of this competition is to address the shortage of teaching resources in the rural areas of developing countries. Each team designs an open-source Android application that enables children aged 7 – 10 years with no access to schools to learn basic literacy and numeracy without adult assistance. RoboTutor uses a series of interesting and simple activities and games to teach children reading, writing and arithmetic in English and Swahili. In this project, my job was using Android to design and implement a scoreboard for activities to teach children the concept of place value, and a racecar game, Akira, to teach them number sense.

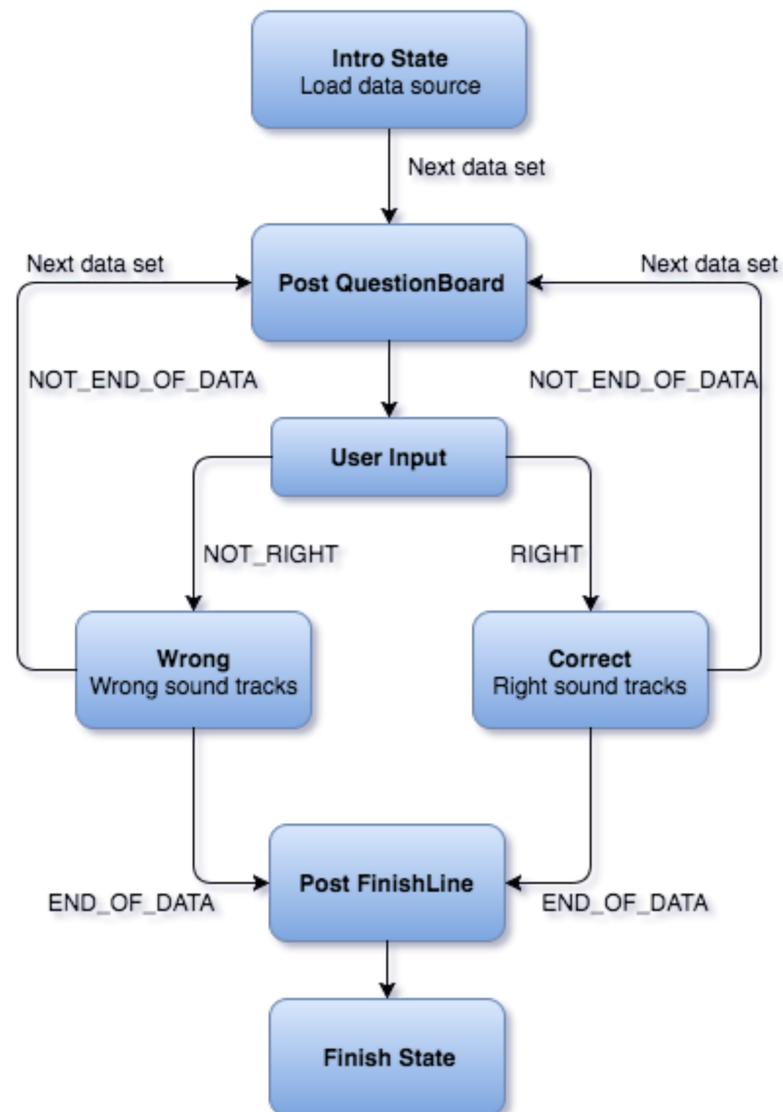
### Akira – racecar game

Akira is a racecar web game, originally designed by MFDC. In RoboTutor, we reimplemented Akira and made the game flow and user interface simpler for pre-school children. In this game, the player controls a racecar with a number or a math equation below it. To score points, player needs to switch the car to the correct lane. This game is simple and intuitive for kids, and expected to teach them number sense.



### Animator Graph

Since the RoboTutor team consists of members from diverse background, from Computer Science, Human-Computer Interaction, Psychology to Education, we hope all members can edit the flow of an activity or game, data set, sound tracks quickly and easily. Therefore, we use a JSON framework by which all members can change the game flow. Animator Graph is the part controlling the game or activities flow in the JSON framework, and it is an analogy to finite state machine.



### Scoreboard

To let children understand the concept of place value, we use the analogy between score and coins. Ten pennies are worth a dime, and ten dimes are worth a dollar. This conversion is similar to ten 1’s are worth a 10, and ten 10’s are worth a 100. Using this concrete analogy, children are expected to understand this abstract concept more easily. Furthermore, we use animation transforming ten little pennies to a large dime to illustrate the converting process.

