Artem Aleksanyan

Car Racing Game

### Functionality

* Shows cars and their movements around the racetrack.
* Certain number of points as locations/stops.
* Each pair of points has a certain, not necessarily unique, but not standard distance between them
* Game has between 2 and 4 players. Each player has a different and unique starting point and ending point.
  + Each player can choose their trajectory, i.e., go to point A, then C, then E, etc.
* The objective of the game is to reach the end via every other point
* There is a timer for each individual car. The winner is the player whose car completes the course in the least time.
* Randomize variables pertaining to performance of car
  + Such as: tires/wheels, suspension, brakes, engine, weight, etc. Factors affect performance of car.
* Allow user to pick their own colors.
* Game is turn-based. It should clearly say whose turn it is.
* There should be several different paths that a user can take between the start and the end. Each different path should offer a different total time.
* Should display stats of each car: specifications (randomized values), path taken, speed, total time, etc.
* Should have the following user interactions:
  + Before game starts: “Rules/Instructions”, “Play game” buttons
  + After game starts: player number selection, color selection for each player
  + During game: “Rules/Instructions” and “Quit” buttons, buttons to select next destination.
  + After game is over: “View Results”, “New Game”, “Exit” buttons

#### Data

* The randomized information/statistics regarding the performance of a user’s car should be stored for the duration of the game. So should the color choice, but the available color choices should be predefined and presented to the user in a menu.
* The game needs to keep track of every
* The game should randomly create a map of each location/stop (with random distances between each) so the distances between should be created on start.
* Game should save all the data involved in the race to display it all at the end. This includes the path the user took.

### Usability

* Controls should be simple and easy to use. The only thing that a user should do is pick their car’s color and pick what point to go to from where they are. It is, however, important that an end point be defined and not able to be selected before all the other points are reached.
* Should have a very clear and easily understood GUI showing both where a player has been and where they are. Make everything color-coded to the player’s selected color so that there is no way to mistake which is which.
* Define rules clearly before start of game.

### Reliability

* Game should not allow a user to backtrack to any point that they have visited. This should be user-error-proof. Even if they click on the same destination multiple times, nothing should happen.
  + Worst thing that a user should be able to do is play poorly.

### Performance

* Does not necessarily have to be smooth and seamless animation.

### Supportability

* Potential future feature: playing over local server or Bluetooth so that all players do not have to gather around one computer.
  + Potential support for more players. Make game with expandability in mind (e.g. have variable number of map points). Previous bullet should be implemented first.