Grabble

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Grabble is a mobile game implemented to allow users to collect letters from around the University of Edinburghs Central Area and make words. The features as well as the aspects of the system are described below. There are functional and non-functional requirements that are necessary for the implementation of the game. Android Studio allows to create applications targeting many devices. My implementation of Grabble will target phones and tablets with minimum SDK Android 4.4. Doing so, Grabble can be run on approximately 73.9% of the devices active on the Google Play Store. Grabble will extensively use GPS location of the device it runs on, consuming battery of the device quickly. Also, its features will potentially use the devices memory. Android 4.4 with its improved memory usage will benefit the users gameplay experience, reduce lagging and allow the user to use other features of their device more smoothly.

Requirements

- A Grabble Letter Map exists for each day of the week, which is available in the Keyhole Markup Language (KML) format.
  - The map loaded in gameplay is determined by the day of the week when the application is started. The application asks for permission to access the calendar of the users device in order to load the map.
  - The map remains the same until play ends. i.e. The map does not have to be replaced at midnight with the next days map if the game is being played then.
  - Grabble will use the maps from the following directory since they may be updated at any time.
    - http://www.inf.ed.ac.uk/teaching/courses/selp/coursework/
    - The application asks for permission to access the internet and the url above.
  - Each map contains 1000 points attached with an uppercase letter and are numbered from 1 to 1000.
  - Each point has latitude that lies between 55.942617 and 55.946233 and longitude that lies between -3.184319 and -3.192473.
- The application will recognise Placemarks from the KML documents.
  - Each Placemark contains the following
    - A unique identifier of the place i.e. A number from 1 to 1000

    - A description specifying the letter attached to the place
    - A Point with coordinates ¡longitude, latitude, height¿ where the height is always 0.
  - The Android LocationManager API of the application will determine how close the player physically is to a certain Placemark and once they are at a range 10m from the Placemark, it will indicate they are able to grab the letter.
  - Once the player grabs the letter, the Placemark will change colour.

- The Official Grabble Dictionary 2016 contains 23,869 entries of seven-letter sequence of characters considered to be words.
  - It is available online at http://www.inf.ed.ac.uk/teaching/courses/selp/coursework/grabble.txt from where the application will have access to in order to check the words created by the user

- The letters are randomly distributed to the Placemarks.
  - Each letter has a value and it depends on how often it occurs.

A	B	C	D	E	F	G	H	I	J	K	L	M
3	20	13	10	1	15	18	9	5	25	22	11	14
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
6	4	19	24	8	7	2	12	21	17	23	16	26

  - Collecting the letters and summing their values will assign a score to the word created.
  - Once a letter is collected from a Placemark the application wont allow it to be collected again on the same day map.

Bonus Features

- The main Bonus Feature of the application is that it will keep a history of the words the player has created and their score.
  - A scoreboard is created with the highest-score word first.

- A battery saver mode will be an option in the settings for the player to choose when they want to consume less battery.

- When the player enters the range of a Placemark, the device will vibrate notifying the player they can grab a letter.

- When the player grabs a letter, the Placemark will change colour (or disappear) from the map indicating that the player cant go to the same Placemark and grab the same letter on the same day map.