Design document

Software Engineering Large Practical

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Contents

Introduction

The design document is presenting the plan of the implementation work which will realize the design of Songle. It presents my ideas for the version of the game and has a record of the design decisions taken including the bonus feature that are offered by the app.

Main Idea

Songle, as described in the coursework specification, is a "location-based mobile phone puzzle game which allows users to follow a map and collect words which have been scattered at random around the University of Edinburgh's Central Area. The words make up the lyrics of a well-known song and the puzzle aspect of the game is to guess the song from the words which have been found". The approach I chose to the idea, was to encourage the player to explore the campus of George Square and physically exercise through walking while playing the game. A more detailed explanation is given in the Bonus Features and the Design Decisions sections.

Bonus Features

Point System

My implementation uses a point system that rewards the player for exploring George Square Campus by increasing the points for each lyric found. A player that chooses not to travel much will get a much lower score than a player that walks a lot and collects many lyrics. This strengthens the main purpose of exercising and exploration of the campus. In addition, the scoring system is different for each difficulty which further enhances the experience of the game for the reasons explained under replayability.

Distance travelled

Further encouraging the user to exercise, the distance travelled is being tracked and displayed to the user. If the user guesses the song correctly, he earns bonus points related to the distance travelled and the difficulty chosen.

Statistics

This feature, allows the player to see the total distance travelled, the highest score, the total number of songs found and the guessing accuracy. This provides the player with a sense of accomplishment as it is a clear way to see the progression made while playing the game. Having these stats available, leads to competitive play between the userbase of the app, by giving them a direct way of comparing their achievements. (e.g. Two friends that play this game could try to outscore each other by playing harder difficulties to improve their highest score.)

Replayability

The game is worth playing more than once. This can be attributed to several factors.

One of them is fact that separate difficulties give different point earnings. A user playing a harder difficulty gets much more points from the scoring actions than a user playing an easier one.

Another factor is that the order of the songs presented to the user is random, thus forcing the user to collect lyrics again if he starts a new game, instead of memorizing the songs and writing the titles right away. This is further forced by having a deduction of points for each wrong guess, so that the user doesn't try every song he found in previous plays. Naturally this implies that the user doesn't have a list of the songs he found. Once a song is found, it is discarded from the list of songs that can be used when deciding randomly the next song. When a new game is started, all songs are added back to the list.

Finally, if a user skips a song while playing, the song is not revealed. If he decides to play the game again, the answer is not spoiled by skipping it in a previous play.

Reveal a lyric

To improve the accessibility of the game, and allow different approaches for playthroughs, the game provides the user the option of revealing a lyric from wherever he is. The downside of this, is a significant deduction of points, instead of the usual addition of points when the user collects the lyric when nearby.

A scenario that the user might chooses to do so; the user collected a couple of words and thinks he is close to finding the answer but he is too far away from the rest of the lyrics and doesn't want to go out of his way to get them, so he reveals them.

Another scenario is that a user for various reasons wants to play the game for the music guessing part and doesn't want to spend much time in George Square campus or cares about the points.

Skip a song

A very reasonable assumption is that not every user knows all the songs present in the game. This feature, allows a user, when he is stuck, to skip the current song without revealing its title. To prevent the user from using the skip function too frequently, the points of finding the song are instead deducted and the distance travelled in this song gets discarded, losing any bonus points the user would have gotten.

Continue

Going through all the songs in one go is very difficult, thus the game has the functionality to continue from where it was left off saving all the progress made when leaving.

Help Screen

The help screen includes all the information required for the user to understand how to play the game. It is important, because it improves the adoption of the game by the user. Instead of leaving the user to figure out the game through trial and error, the instructions leave no room for misunderstanding.

Connection settings

A minor bonus feature is the capability to let the user choose whether he wants to download the remote files using data or only Wi-Fi connections. This is to save bandwidth when the player cannot afford download the files over data connection.

Background Music

The game has background music, because it's about songs after all. (Music used is Royalty Free)

Design Decisions

Main Activity

The first thing that the user would see when he opens Songle is the Main Activity. This is where the options of starting a new game or continuing a previous one, are presented. In addition, here the user can select to see his stats, choose the connection settings and get some help by viewing the instructions. (Screen 1 and 2)
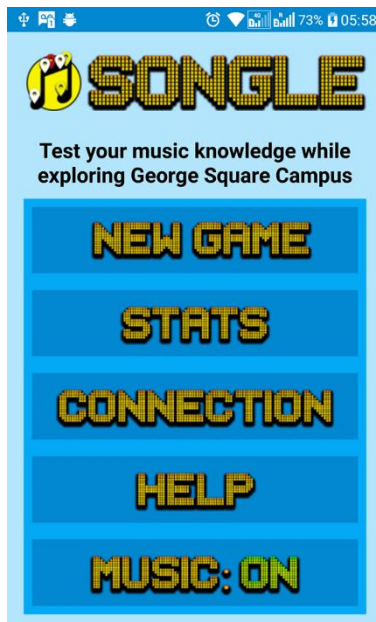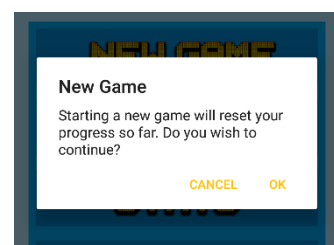

SCREEN 1 MAIN ACTIVITY (WITH NO PREVIOUS PROGRESS)
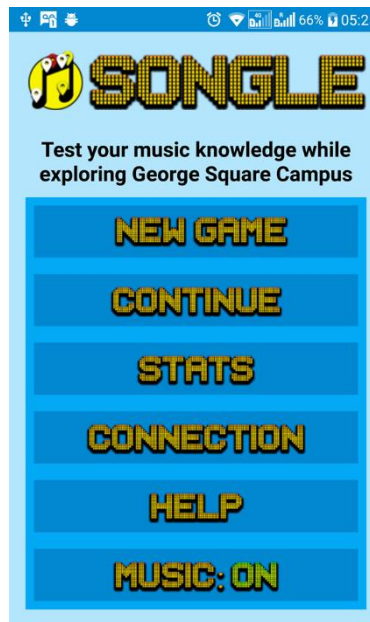
SCREEN 2 MAIN ACTIVITY (WITH PREVIOUS PROGRESS)
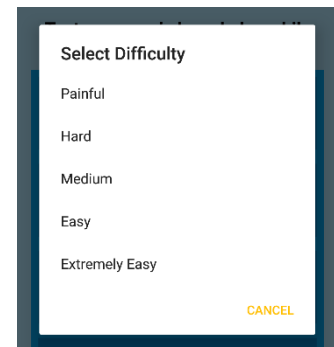
DIALOG 1 SELECTING DIFFICULTY

DIALOG 2 NEW GAME CONFIRMATION

New Game

When the new game button is pressed then the player gets prompted with Dialog 1 to choose the difficulty he wants to play. The difficulties are listed as "Painful", "Hard", "Medium", "Easy", "Extremely Easy", each of them corresponding to one of the five different map versions. After choosing, the player is directed to the Maps Activity.

The player cannot change the difficulty once he started a game and must start a new game to change it. This decision was made to help with the replayability of the game and keep the scoring system consistent. Changing the difficulty mid game would make unfair score advantages to players that switch the difficulty. They get the extra knowledge from the numerous lyrics of the easier difficulties that then can submit the song title in the harder difficulty.

Continue

If the player has played the game before and has some progress stored then the continue button is presented. In addition, this condition will prompt the player Dialog 2 to agree that all his previous progress will be lost when starting a new game. This dialog also ensures that the player didn't just miss click the new game button. Choosing the continue button starts the Maps Activity with all the progress made from the player's previous session.
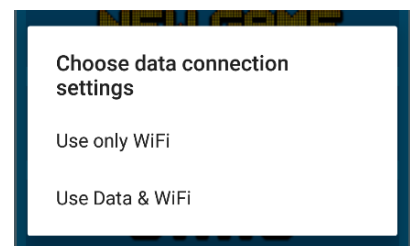
Stats

Choosing the stats option will pop Dialog 3 which shows a summary of the progression seen by the player so far, explained in bonus features subsection Statistics.
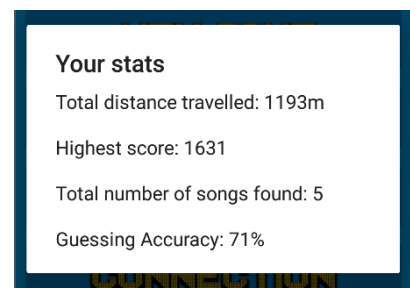
DIALOG 3 STATS SHOWCASE

Connection

The connection option leads to Dialog 4 where the player chooses which data connection can be used to download the game files.

DIALOG 4 CONNECTION OPTIONS

Help

The Help button sends the user to the Help Activity.

Music

The Music button works like a switch turning On and Off the music. Pressing it when the music is On, it will stop the music and turn to the image Button 1 instead. Pressing it again will turn the music back On and return to the On state like Screen 1. Music will continue sounding in rest of the activities.
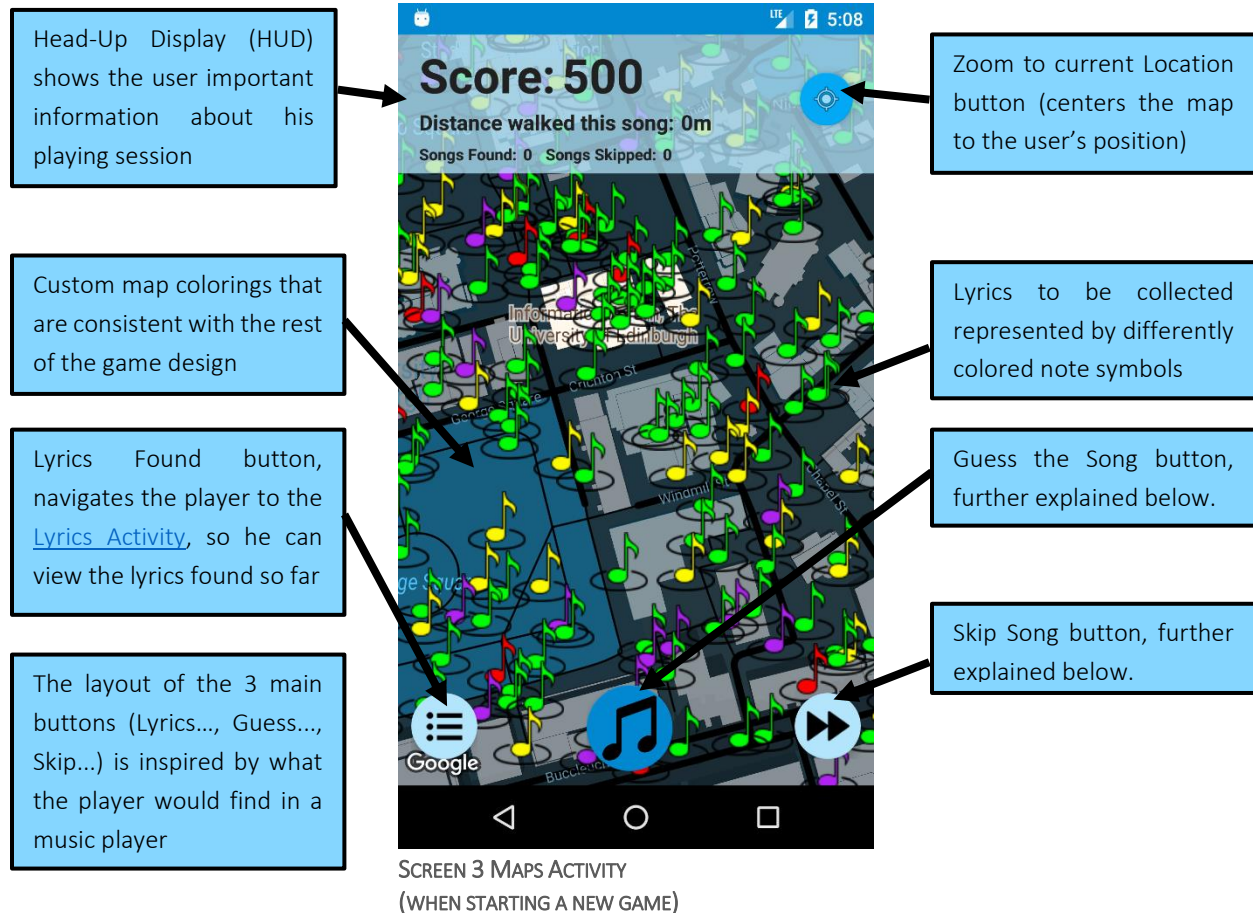

BUTTON 1 MUSIC IS TURNED OFF

Map Activity

The main screen that the user will spend playing the game is the Map Activity. This is where the map of the game is shown, together with all the lyrics that the user can collect.

Below in Screen 3 that shows the map when a new game is started, the whole layout of the activity is explained. The song to be found is selected randomly from the list of songs.

Head-Up Display (HUD) shows the user important information about his playing session

Zoom to current Location button (centers the map to the user's position)

Custom map colorings that are consistent with the rest of the game design

Lyrics to be collected represented by differently colored note symbols

Lyrics Found button, navigates the player to the Lyrics Activity, so he can view the lyrics found so far

Guess the Song button, further explained below.

Skip Song button, further explained below.

The layout of the 3 main buttons (Lyrics..., Guess..., Skip...) is inspired by what the player would find in a music player

SCREEN 3 MAPS ACTIVITY
(WHEN STARTING A NEW GAME)

The starting score for every difficulty is 500 to leave some room for the player to reveal some lyrics or skip songs. The easier the difficulty the more lyrics can be revealed / songs can be skipped with these 500 points until the score reaches zero.
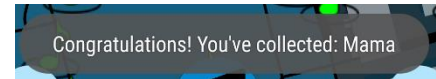
Zoom to the current location

Pressing the Zoom to the current location button centres the map on the current location of the player.
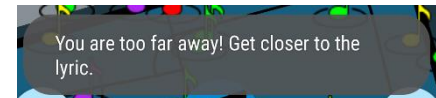

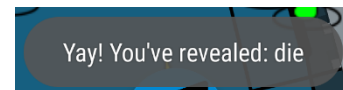SCREEN 4 ZOOMED TO CURRENT LOCATION
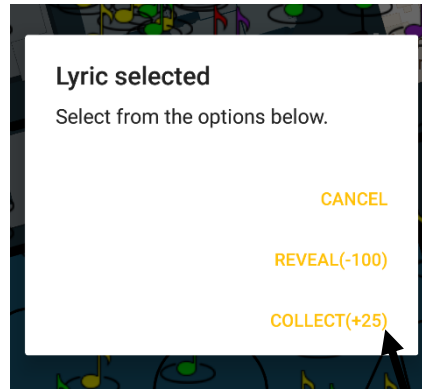
DIALOG 5 WHEN THE PLAYER SELECTS LYRIC

Point values change depending on the lyric classification

TOAST 1 MESSAGE WHEN COLLECTING A LYRIC

TOAST 2 PLAYER TOO FAR AWAY

TOAST 3 MESSAGE WHEN REVEALING A LYRIC

Lyric Actions

When a lyric is selected by the player, Dialog 5 shows him the actions he can take and their effects on the score. To collect a lyric, the user should be close to the lyric and then is shown Toast 1 message containing the lyric. If he is far from the lyric, Toast 2 is shown instead. If the player chooses to reveal the lyric, then Toast 3 shows him the revealed word. Collecting/revealing the lyric removes its note symbol in the map. The points associated with each action can be found in Table 1.

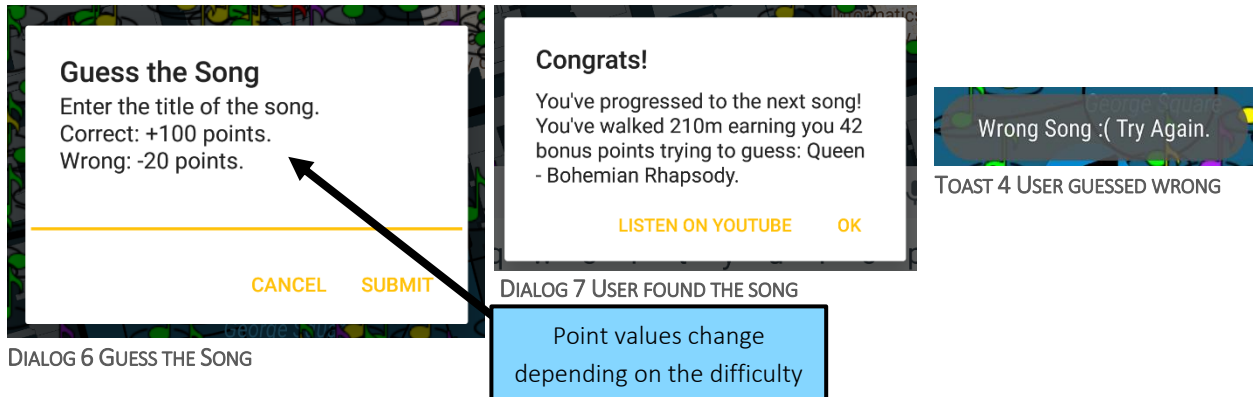TABLE 1 SCORE EFFECT ON COLLECTION VS REVEAL OF A LYRIC

Category of Lyric	Lyric Collected	Lyric Revealed
Very Interesting	+50	-400
Interesting	+40	-200
Not Boring	+25	-100
Boring	+10	-50
Unclassified	+200	-500

The points are allocated in a way that finding a rare lyric, rewards the player with more points. Revealing a lyric, ruins the fun of collecting it, so the point reduction is significantly larger.

All the lyrics found/ revealed of the current song can be retrieved using the Lyrics Found button which it will direct him to the Lyrics Activity.

Guessing the song

If the user believes he has solved the mystery and guessed the song he can press the Guess the Song button that will lead to Dialog 6. Here the user is informed of the points that he will earn/lose depending on the success of his guess.

Guess the Song
Enter the title of the song.
Correct: +100 points.
Wrong: -20 points.

CANCEL   SUBMIT

DIALOG 6 GUESS THE SONG

Congrats!
You've progressed to the next song!
You've walked 210m earning you 42 bonus points trying to guess: Queen - Bohemian Rhapsody.

LISTEN ON YOUTUBE   OK

DIALOG 7 USER FOUND THE SONG

Wrong Song :(Try Again.

TOAST 4 USER GUESSED WRONG

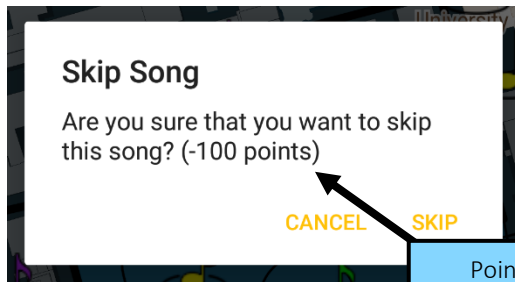Point values change depending on the difficulty

Guessing correctly, Dialog 7 is congratulating the player for finding the song and specifies the distance he travelled as well as the bonus points earned by that distance. Next the map is updated for the next song (which is randomly chosen from the songs not guessed yet), the distance travelled for the current song and the lyrics found are reset. When the user guesses wrong, Toast 4 is shown instead. The points associated with each difficulty are shown in Table 2 below. The reasoning behind them is explained in point system and replayability subsections.

TABLE 2 SCORE EFFECT ON CORRECT VS INCORRECT GUESS DEPENDING ON THE DIFFICULTY

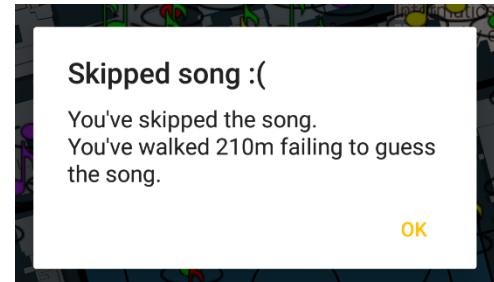| Difficulty (# in xml)	Correct Guess	Incorrect Guess
Painful (1)	+1000	-200
Hard (2)	+500	-100
Medium (3)	+400	-80
Easy (4)	+200	-50
Extremely Easy (5)	+100	-20

Skipping the song

When the user gets stuck he can use the Skip Song button, which skips the current song.

Skip Song

Are you sure that you want to skip this song? (-100 points)

CANCEL   SKIP

Point value changes depending on the difficulty

DIALOG 8 SKIP SONG CONFIRMATION

Skipped song :(

You've skipped the song.
You've walked 210m failing to guess the song.

OK

DIALOG 9 SONG SKIPPED

Firstly, the player sees Dialog 8 that informs him the point reduction of skipping a song and lets the player decide whether he wants to proceed. The point deducted are the same magnitude of the point added when guessing a song correctly (Table 2). After agreeing, Dialog 9 confirms that the song was skipped and lets the user know the distance travelled for this song. The song is not revealed for the reasons explained under replayability. The next song is again selected randomly from the songs that haven't been found yet.

Score: 692

Distance walked this song: 0m
Songs Found: 2 Songs Skipped: 1
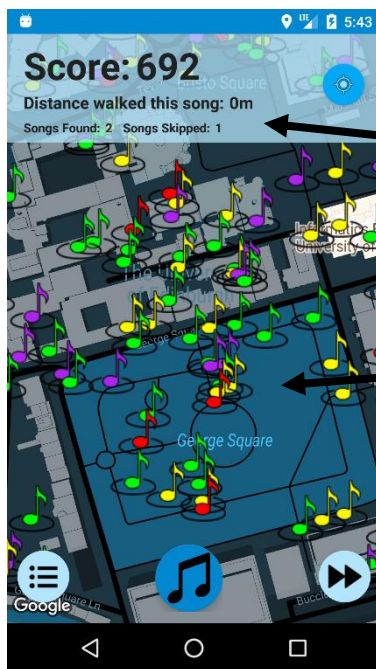
HUD is always updated after taking any action that affects the stats shown

The lyric map is updated by removing all the lyrics from the previous song and adding the lyrics for the next song

SCREEN 5 UPDATED MAP

Congratulations!

Game completed! Last guess: The White Stripes - Seven Nation Army
Final score: 1354
You've guessed 13 out of 18 songs.

LISTEN ON YOUTUBE   OK
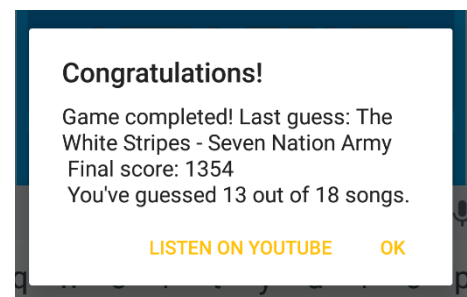
DIALOG 10 ALL SONGS FINISHED

Completing the game

When the player goes through all the songs, Dialog 10 is shown so that the player knows that he finished the game, what was the last song (if he skipped the last song, that part is not included), his final score and how many songs did he guess. The player then proceeds to the Main Activity Screen 1, where he could start a new game with a different difficulty and see his stats.

Lyrics Activity

All the lyrics collected/ revealed from the current song are displayed here as shown in Screen 6. When a new song is to be found the list gets cleared of any lyrics from previous songs. The player gets into this activity by pressing Lyrics Found button on the Maps Activity.
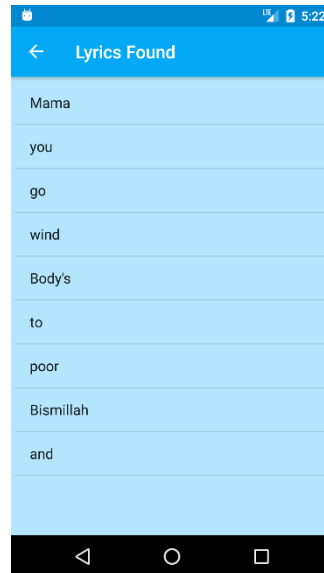
SCREEN 6 LYRICS FOUND SCREEN

Help Activity

A new player is going to probably going to be unfamiliar with the game mechanics. This is what the Help Activity tries to assist, by giving the player some instructions on how to play Songle. This activity, as shown in Screen 7, can be accessed by using the Help button on the Main Activity.
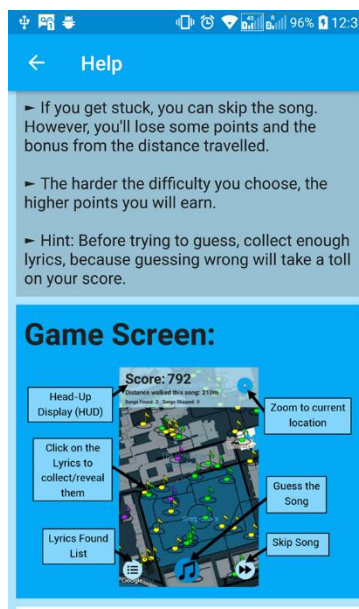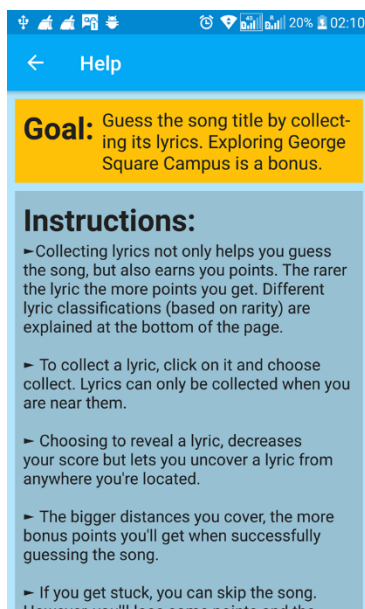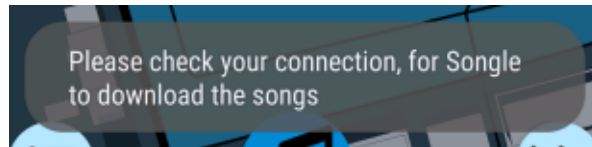

SCREEN 7 HELP

Managing Irregularities

It is very common that the users don't know what's required (eg. Internet connection, Location etc) to play the game. To inform the player of what he should do, to play as intended, Toast messages are used when an action cannot be completed without getting the resource / permissions first. See below for examples.


TOAST 5 ENTERING MAPS ACTIVITY WITHOUT INTERNET CONNECTION

Toast 5 is shown when a user goes to Map Activity without having an active connection according to the network setting chosen. E.g. If the user chose to download only over Wi-Fi, then this toast will still show up (if Wi-Fi is disabled but 4G data connection is on). As soon as the player opens the connection, the songs are loaded and the map is updated with the lyrics.
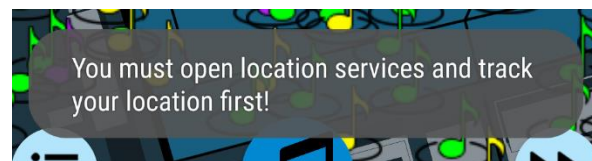

TOAST 6 TRYING TO COLLECT LYRIC WITHOUT LOCATION SERVICES ON

Toast 6 is shown when a user tries to collect a lyric when his Location Services are switched off. The user must first open his Location Services if he wants to collect lyrics. After opening the Location Services, the collection of lyrics will work normally.
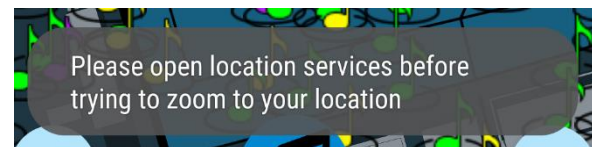
TOAST 7 TRYING TO ZOOM TO CURRENT LOCATION WITHOUT LOCATION SERVICES OPEN

Toast 7 is shown when a user wants to zoom to the current location while his Location Services are switched off. When the user opens his Location Services, then the zoom to the current location will work as expected.
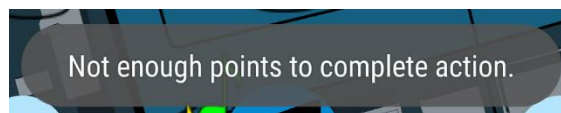
TOAST 8 NOT ENOUGH POINTS TO PROCEED WITH ACTION

Toast 8 is shown when an action that reduces points (e.g. skip song) is made and not enough are available, resulting in the action being discarded. Score cannot drop below zero.