DEVELOPMENT OF ANDROID MOBILE APPLICATION FOR RUNNING STATISTICS

of the master graduate qualification work
for the student of the group CE-219

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Research goal and objectives

Goal:

development of android mobile application for running statistics

Objectives:

- To study the mechanism work of the mobile applications for running
- To study the mechanism of calculating the calories
- To carry out the analysis of popular programming languages, to select optimum for writing of a program application code
- To develop the interface of a mobile application
- To develop the structure of the required database for registration in the application
- Test the application
### Comparison between the popular uses frameworks for applications programming

<table>
<thead>
<tr>
<th>Function</th>
<th>Android studio</th>
<th>Eclipse</th>
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<tr>
<td>Build System</td>
<td>Android Studio uses the time tested Gradle build system. It builds on Apache Maven.</td>
<td>Eclipse uses Apache Ant as its main build system, a very robust XML based build system.</td>
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<tr>
<td>IDE Performance</td>
<td>Android Studio experience feels faster and more strong.</td>
<td>Eclipse is big software purely Java based. To run this software properly all you need to have more than decent amount of RAM and really good CPU to back it up software purely Java based</td>
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<tr>
<td>User interface Design/Layout</td>
<td>Android Studio has new interface design pretty faster. It responds to changes more robust and rapidly manner.</td>
<td>in Eclipse, we have to set them manually in XML file.</td>
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The features that the system provides to the user:

- Display the number of steps that the user run it
- Display the number of user calories that he spent in each time he run
- Display the history of the user running in previous days
- The system must send the notifications when the user achieved the challenges
- Display the graph of the distance, calories and steps that the user run it in each day
- Display the distance that the user run it in the background
What is the mechanism work of the mobile applications for counting steps?

Accelerometer sensor
- Analysis of magnitude vector for accelerometer sensor
- Setting a changeable threshold level. When signal from accelerometer is above it I count it as a step
Look up the MET value of the activity that you performed. For example, general running has a MET value of 8.

\[
\text{calories burn for a specific activity} = \text{MET} \times \text{Weight(Kg)} \times \text{the time you performed the activity (Hours)} \]

\[
\text{calories burn for a specific activity (running)} = 8 \times \text{Weight(Kg)} \times \text{the time you performed the activity (Hours)}
\]
Use case diagram

Android Mobile Application for Running

- Change the settings
- Add new training
- Add new distance measurement
- Display and delete the history of running
- Display and delete the history of training option
- Modify the user information

Registered user
Structure of the database

MySQL

- ID
- user_name
- user_password
- user_weight
- user_height
- user_phone
- user_email
- user_image
- created
- modified
Android studio

- Java
- Xml
Structure of the project

- 18 files
- 14 interfaces
- \( \approx 4500 \) lines of source code
View of the application interfaces

- Register interface
View of the application interfaces

- Main & History interfaces
View of the application interfaces

- The menu & the user profile
View of the application interfaces

The training & distance measurement options

Training

- 00:00:52 h
- 14.50 m
- 1.00 km/h
- 0.00 cal
- 29 Steps

Distance Measurement

- 3.50 m

Steps since May 2018

- 59 Steps
- 0.00 cal
- 29.50 m
- 00:03 h

Walking 09.05.2018
28 Steps

14.00 m
00:01 h

Walking 09.05.2018
31 Steps

15.50 m
00:02 h
View of the application interfaces

- Settings & work in background interfaces
Main results

- The mechanism work of the mobile applications for running was studied
- The mechanism of calculating the calories was studied
- The analysis of popular programming languages, to select optimum for writing of a program application code was studied
- The interface of a mobile application was developed
- The structure of the required database for registration in the application was designed
- The application was implement
- The application was tested
Perspectives

- select the user position by the GPS.
- ability to post your running achievements in the social networks.
- ability to find the near running areas in the GPS.
- send notification if the weather will be rainy in next hours to avoid running in the rain.