

Benha University Mobile Application 2016-2017

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Introduction

- A University APPs which can provide huge amount of data and benefits and help students to save a lot of time
- Online University APPs are much like hard copy material , news papers and have the same legal boundaries such as laws regarding privacy and copyright.
- Benha App has many new modules old & new ones to maximize students and staff member benefits

MAL (mobile application Launchpad)

The logo for MAL (mobile application Launchpad) features the letters 'mal' in a large, bold, green font. To the right of 'mal' is a vertical green bar. Further right, the words 'mobile', 'application', and 'launchpad' are stacked vertically in a smaller, grey, sans-serif font. The word 'application' is highlighted in green, matching the 'mal' text.

mal | mobile
application
launchpad

. Tech & Innovation Track

- Applicants can apply on their own or as part of a team consisting of at most 2 members
- Every team must have completed the Google-Sponsored Udacity Course
- Apps must be newly created and innovative, solving a social problem

Project Objective

To develop an Interactive Android App which provides

- News in different languages like English, Arabic to provide Latest updates about university.
- Access different educational mails like : EBK and university mails
- Indoor navigation → to get your directions in the university using your APP
- Outdoor navigation → get directions to any Benha University departments & Colleges

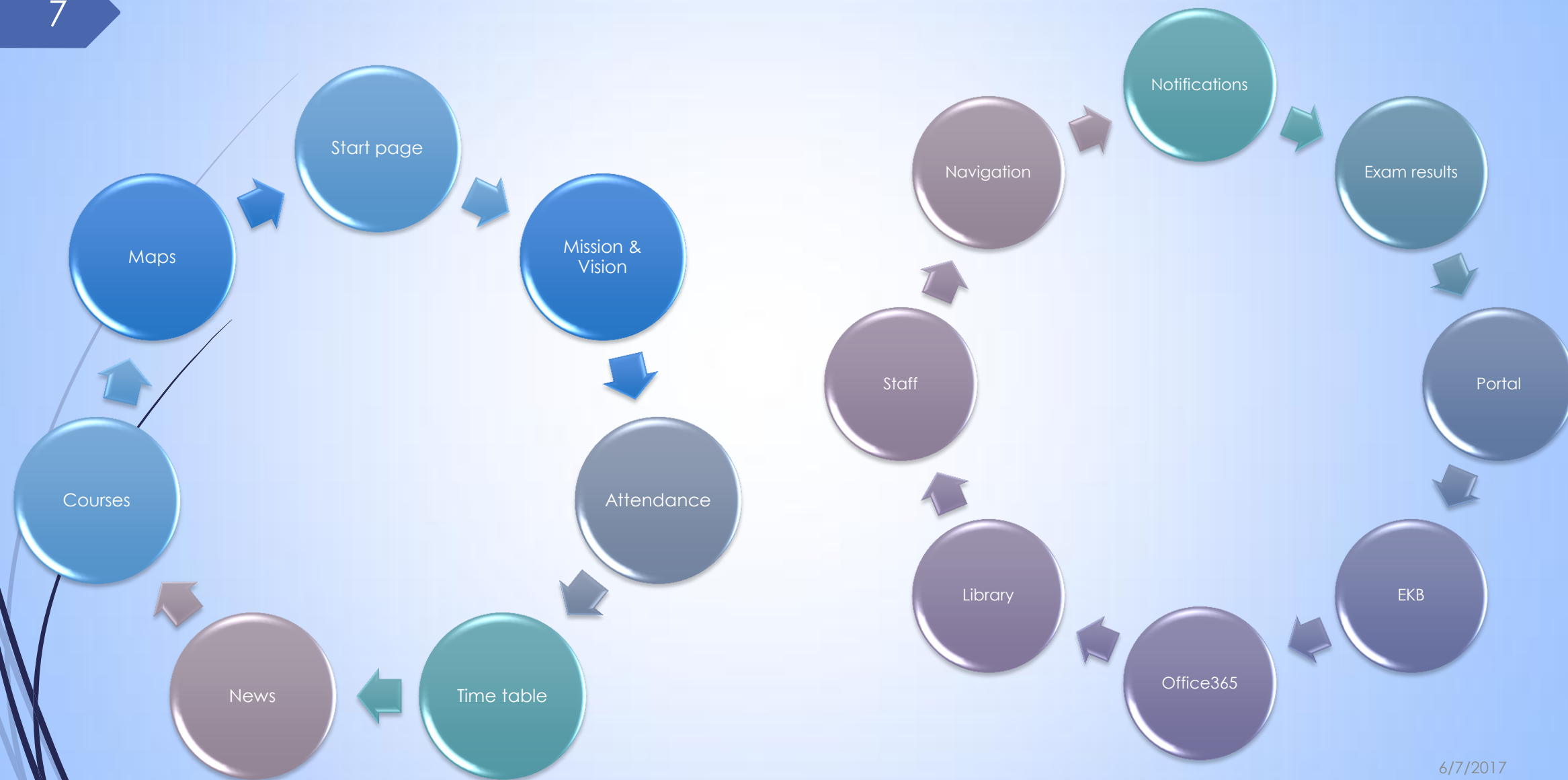
Project Objective

- Allow students to fill questionnaire from APP
- Provide Emergency Info and safety rules about University
- Attendance recorder – easy to identify students with QR code or RFID
- Provide data about courses and staff and Notify students about new contents from their staff
- Propagate University Mission and Vision between students

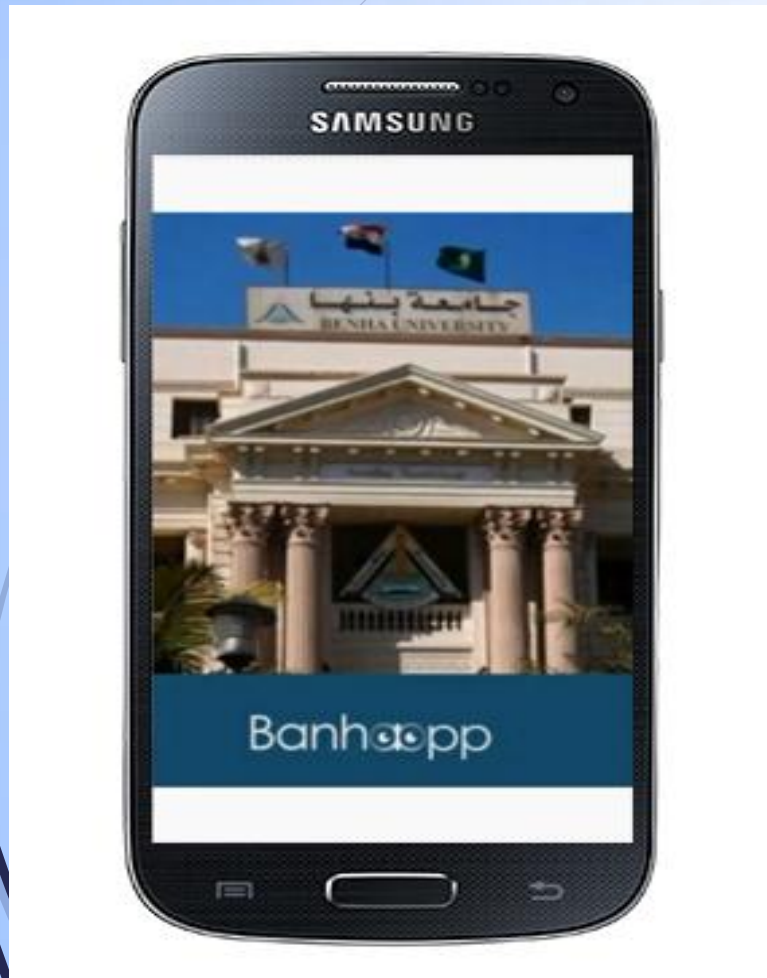
What we learnt?

- ▶ Android Programming
- ▶ Indoor Localization & mapping
- ▶ Android Web-viewer.
- ▶ OCR & QR codes development
- ▶ AI search technics like A* search
- ▶ Database and server integrations in big systems

modules



Splash screen



Custom list

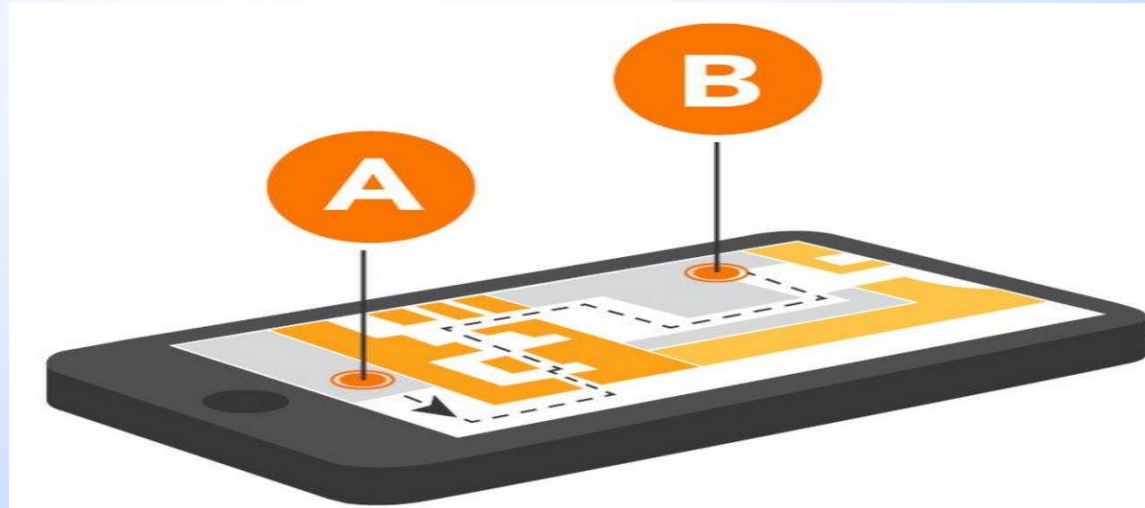
- Every view which gets inflated from an XML layout file will result in a Java object. Inflating layouts and creating Java objects are expensive with regards to time and memory consumption.
- In addition using the `findViewById()` method is relatively time consuming, even though it is not as bad as XML inflating.
- So we used custom list to enhance performance

Indoor Navigation

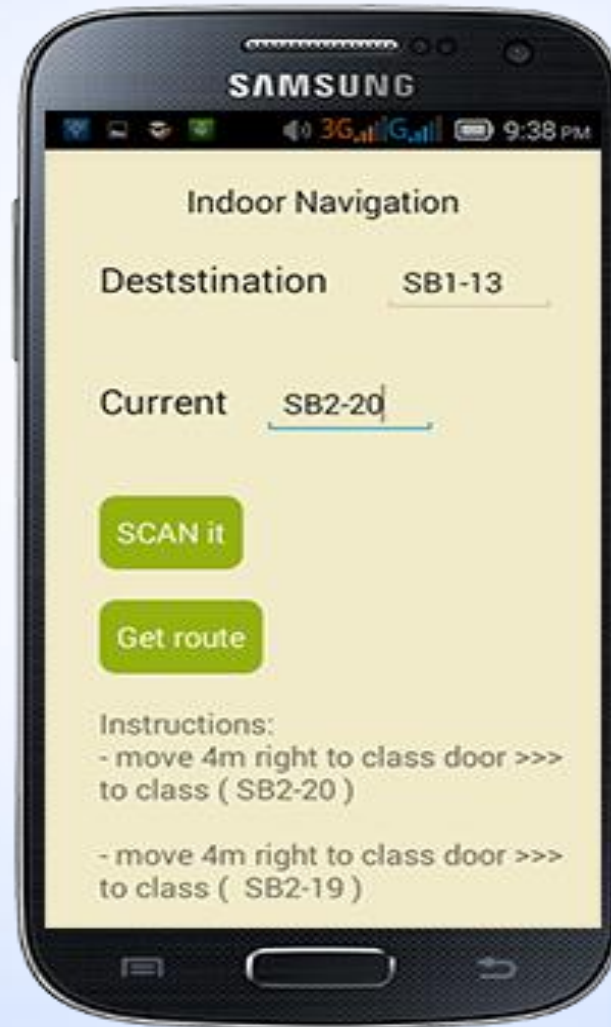
- Each collage has a lot of classes , rooms and floors this can cause long time to get To your destination class
- Using our App will help to provide data, route and instruction to reach any location in your local collage without using internet or GPS

Indoor Navigation

- An indoor positioning system (IPS) is a system to locate objects or people inside a building using radio waves, magnetic fields, acoustic signals, or other sensory information collected by mobile devices.
- There are several commercial systems on the market, but there is no standard for an IPS system



The start Activity of Indoor Navigation

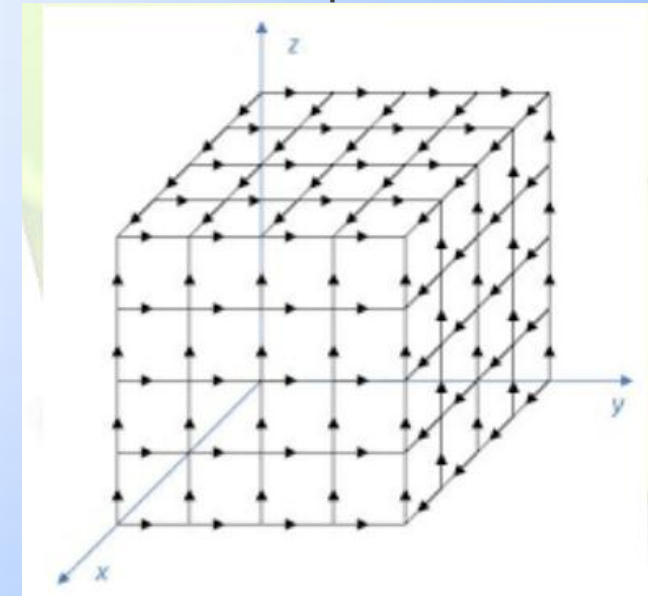


Why not to use GPS ...?

- Global navigation satellite systems (GPS or GNSS) are generally not suitable to establish indoor locations
- Microwaves will be attenuated and scattered by roofs, walls and other objects.

Smart building model

- ▶ This idea that we can represent any collage programmatically as a graph of nodes
- ▶ Each node is one of the classes
- ▶ The cost between nodes indicates the distance , upstairs and downstairs between the classes
- ▶ Euclidean heuristic function



Techniques used in indoor navigation

- A-star search technique
 - As a good way to find the best route between the source and the destination is to use the A-star search technique
- Optical Character Recognition
 - Some new student are not aware with the addressing system of the classes so we help them by OCR system
 - So they need only to use this system to take a photo to name plate of their current location and our system will lead them

We have used OCR Android library to read class names



Training data for OCR

- ▶ A data file is required for every language you want to recognize. For English,
- ▶ This data file is included in the application assets and is automatically installed when the app is first run.

How Tesseract works

- The first step is a connected component analysis in which outlines of the components are stored.
- This is a computationally expensive design decision at the time, but has a significant advantage
- By inspection of the nesting of outlines, and the number of child and grandchild outlines, it is simple to detect inverse text and recognize it as easily as black-on-white text.

Software requirement

- Android version 2.2 and Higher version
- Standard Development Kit(SDK)
- Android Studio ,JDK
- internet
- CAMERA
- MEMMMORY_ACSESS
- ACCELOROMETER
- Some software → Zxing QR code reader

Data base

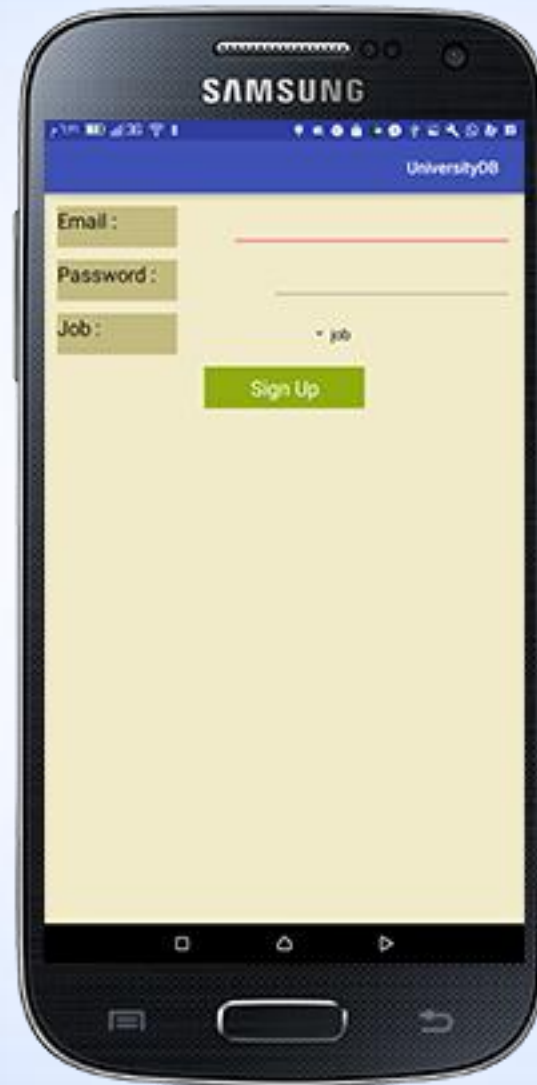
- Local data base in android, this is used in search faculties, departments, staff, courses



Android Web service

- There is database needs to be accessed by users via internet Like: login, upload files, notification, so this data base needs to be connected with server
- Server receives data from android to store it in
- SQL server or to verify if this data is correct or not from SQL server database then return response to the client
- Alive server is the server of university but we do not use it. and for testing we used tomcat server that is connected to SQL server

Sign Up



Doctor home page – upload data



Notifications

- ▶ on the other hand student can get the notification of particular course



Maps

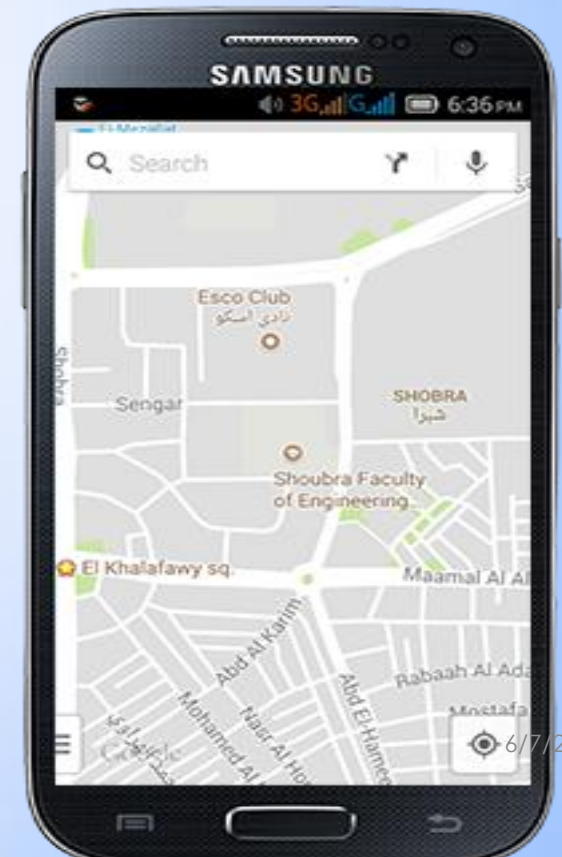
- Each university has many collages and each collage has many buildings,
- We worked to help students reach their destination building easily by GPS, Google maps and so on

Maps

- ▶ list of all collages to help student choose collage he wants to reach
- ▶ On clicking on any collage name it will navigate to its location on Google maps



- ▶ Google Map navigation to help student reach his destination



News time line

- We also added news timeline to get more interactions from users of App

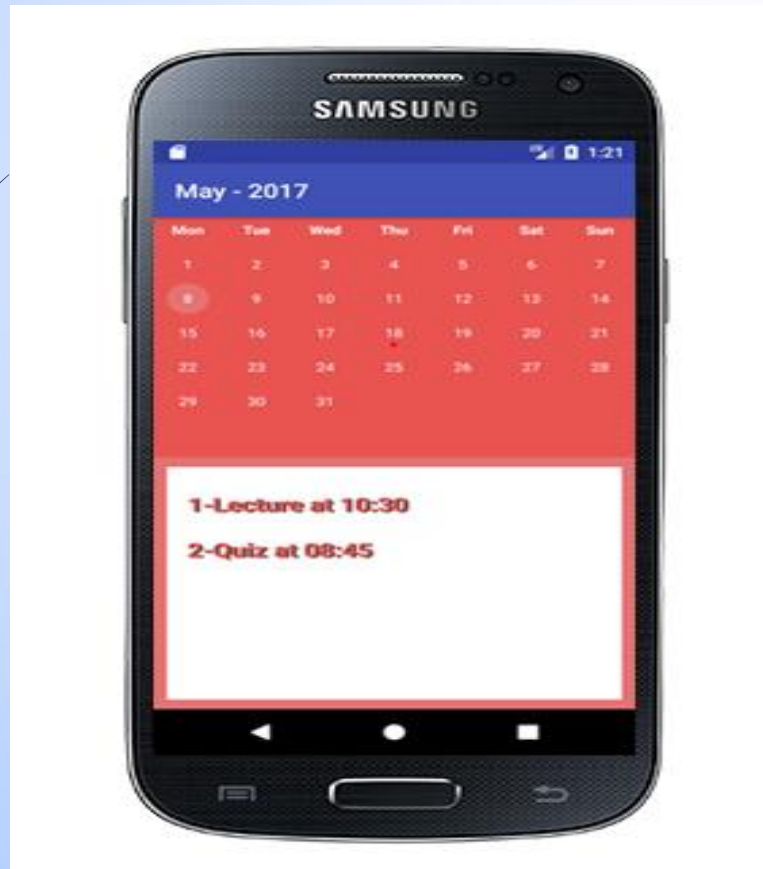


Calendar

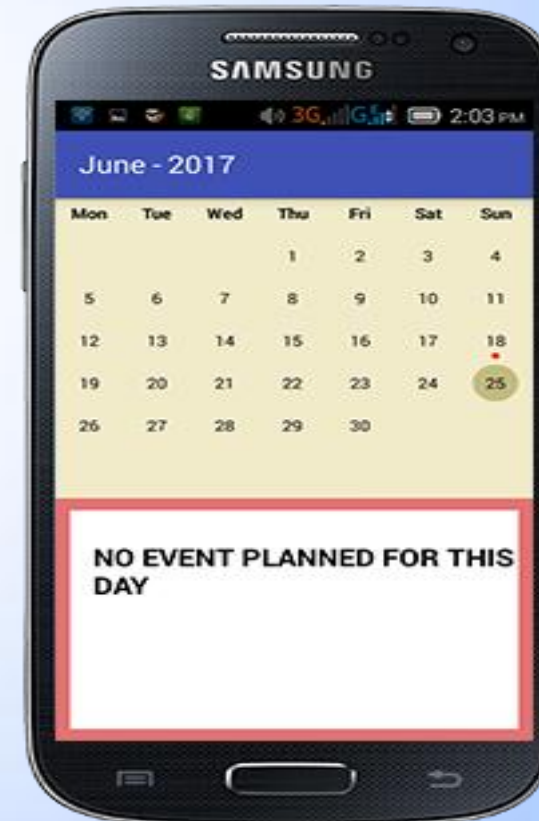
- We have added student planner calendar to help student keep up with new events and updates in his collage
- It needs to synchronize with the server of University to get new updates periodically

Calendar

➤ See days with events



➤ See days without events i



News

- One of the advantages of android apps over websites is that they're closer to the user.
- Benha University has a news and photos gallery but not many students are aware of this fact,
- So the purpose of this module is to bring the gallery closer to the student.



Detailed news event



Mission & Vision

Propagate Mission & Vision
of Benha university and all of
its Colleges



Courses

- Easy access and search for any course in the university to know its content and information



Course description – on website



Exam results

- ▶ we can lead student to the results website to get their exam results



Attendance

- It's one of our best modules
- Simply you can use it to record all students attendance



QR codes

- ▶ Quick Response Code
- ▶ Started in Japanese automotive industry
- ▶ QR Codes are 2-dimensional, which results in them having a square filled with data. Besides data, there are certain identifiers helping the code being read correctly



Attendance

- ▶ We use external QR code ZXING based on tesseract recorder App to read QR codes



Attendance

- ▶ We have used Google spread sheet to create bulk QR codes

	A	B	C
1	Text or URL	QR Code	
2			
3	Hi mom!		
4	http://www.tammyworcester.com		
5	Call me at 123-456-7890		

Google spread sheet bulk QR code generator

	A	B
1	Text or URL	QR Code
2		
3	Hi mom!	
4	http://www.tammyworchester.com	
5	Call me at 123-456-7890	

Attendance

- You can save attendance local or upload it on drive
- you can read your attendance with any csv reader



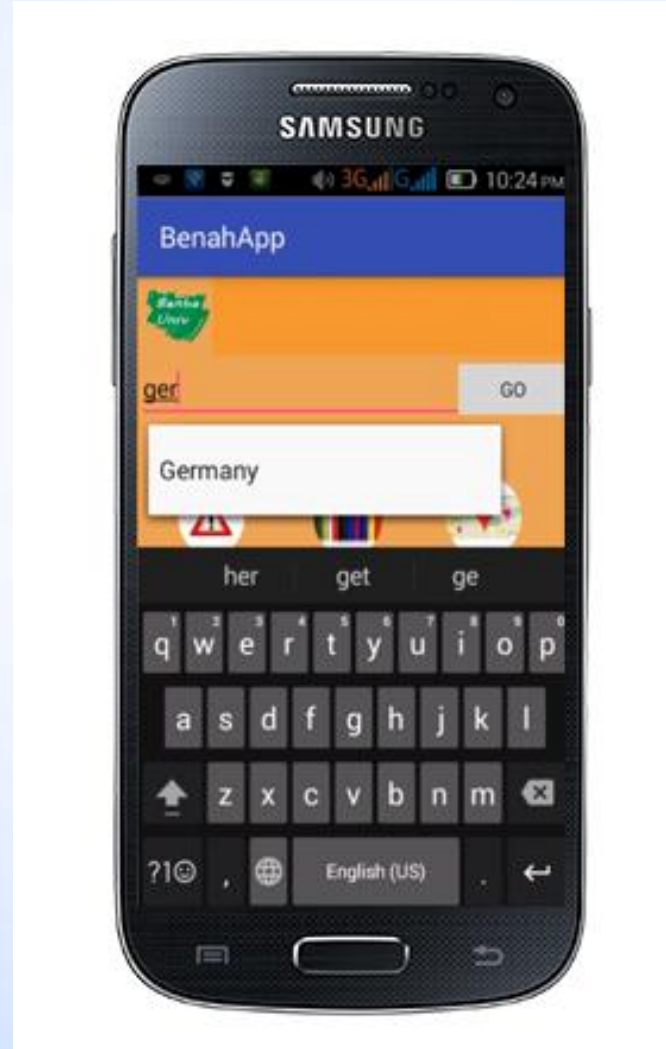
Motion detection - accelerometer

- ▶ An **accelerometer** is an electromechanical device that will **measure** acceleration forces. These forces may be static, like the constant force of **gravity** pulling at your feet

Cheating detection



Auto complete TextView



Portal

- ▶ Allowing easy access to university portal gives our App extra power
- ▶ It can help check additional features



Emergency calls

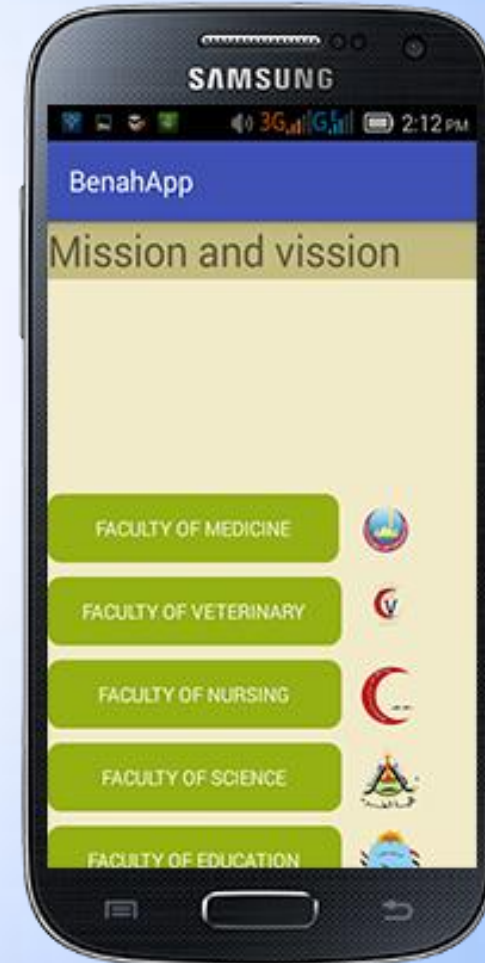


Safety rules



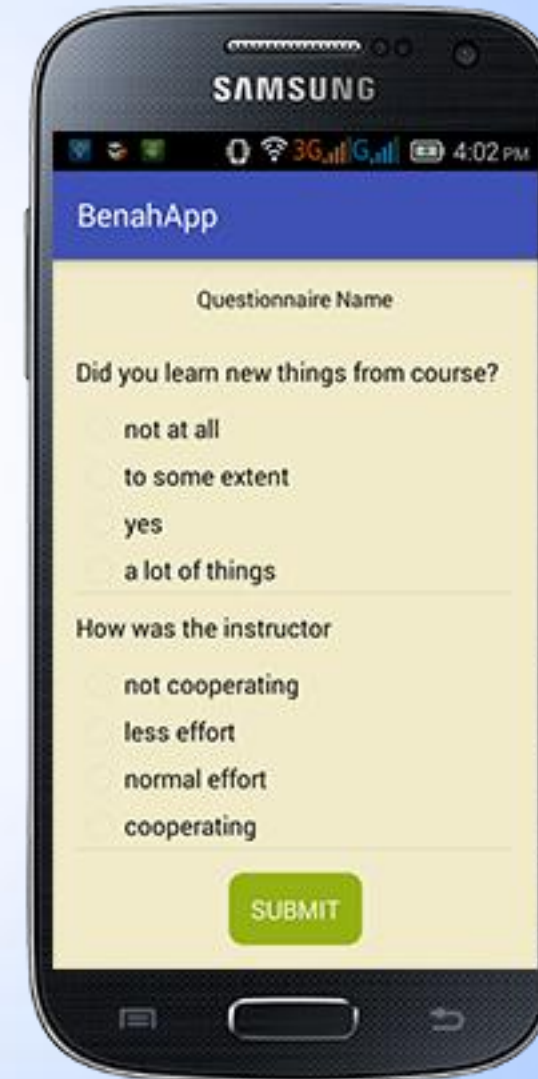
Multi-lingual Arabic-English App

- Using smart xml files for multi-lingual app doesn't need big changes in the App code



Questionnaire

- Questionnaire is very important to develop educational level and college labs
- Develop this part from app by answer some question about college staff and the college facilities
- Help student and officials to discuss problems and solve it by participation



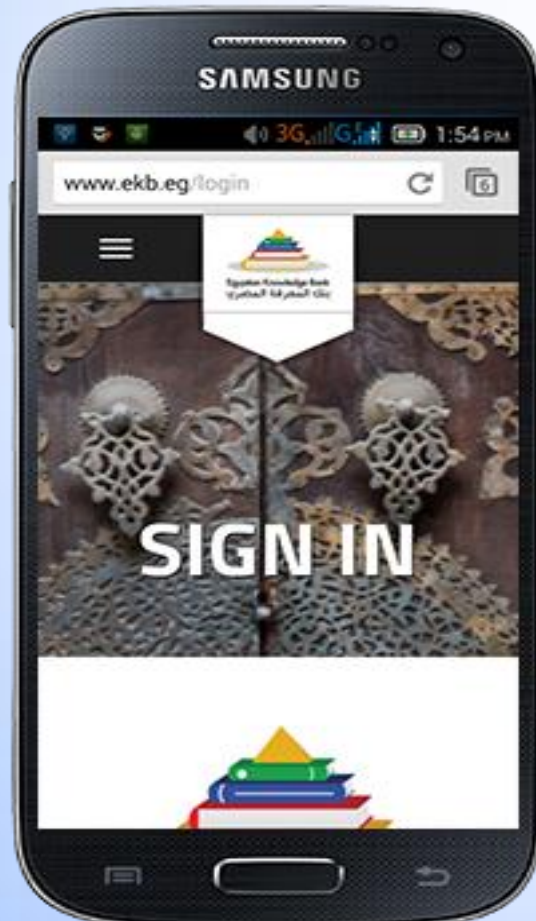
Important educational websites and settings

- To make our App a successful one we needed to make it All in one so any student can get all data he needs from it and can reach any educational resource fast



EKB and Egyptian libraries website

➤ logo of EKB on App



➤ logo of ICTP on App



Office365

- Easy access and integration with educational mail



Staff search

- Easy access and search for all staff members data

The screenshot shows a mobile browser interface for the staff search page. At the top, the status bar displays signal strength, 3G/G networks, and the time 8:09 PM. The address bar shows the URL www.bu.edu.eg/portal/index.php. Below the address bar is a navigation menu with links for Home, About University, and Administration. The main heading is "Staff search:". Below this is a red instruction in Arabic: "أو الانجليزية أو الكلية المسجل بها أو القسم المسجل به*". The search form consists of three rows: "Faculty:" with a dropdown menu showing "select faculty if you know", "Department:" with a dropdown menu showing "select department if you know", and "Staff name:" with a text input field. The date 6/7/2017 is visible in the bottom right corner.

www.bu.edu.eg/portal/index.php X 10

Home About University Administration

Staff search:

أو الانجليزية أو الكلية المسجل بها أو القسم المسجل به*

Faculty: select faculty if you know ▼

Department: select department if you know ▼

Staff name:

6/7/2017

Setting list



Important websites and MIS contacts



Dimensions and style

- Smart ways to add different dimensions for different devices using different xml files
- Easy to change all with the least needed code

Benha App UML model

