



UNIVERSITAT DE
BARCELONA

Software Integrated Project (2019-2020)

Introduction

Karim Lekadir, PhD

Universitat de Barcelona

Dpt. Matemàtiques & Informàtica



Class Content



Objectives

1. Learn to develop a mobile app in Android
2. Integrate multiple disciplines of computer science
3. Integrate different roles in software development cycle
4. Learn to work in a team
5. Learn to consider user requirements and market demands
6. Learn to communicate results and promote software tool
7. Learn to employ critical thinking in software development



Objectives

1. Learn to develop a mobile app in Android
2. Integrate multiple disciplines of computer science
3. Integrate different roles in software development cycle
4. Learn to work in a team
5. Learn to consider user requirements and market demands
6. Learn to communicate results and promote software tool
7. Learn to employ critical thinking in software development

Programming



ANDROID
Applications



- Linux-based
- Open-source and free
- Easy to use
- Can be used in mobiles, tablets, watches, etc.

Programming

- Java-based
- More concise
- Less errors and bugs
- Increasingly popular



| HelloWorld.java | helloworld.kt ▶ ... |
|--|--------------------------|
| 1 public class HelloWorld { | 1 fun main() { |
| 2 public static void main(String[] args) { | 2 println("Hello world") |
| 3 System.out.println("Hello, World"); | 3 } |
| 4 } | 4 |
| 5 } | 5 |



Objectives

1. Learn to develop a mobile app in Android
2. **Integrate multiple disciplines of computer science**
3. Integrate different roles in software development cycle
4. Learn to work in a team
5. Learn to consider user requirements and market demands
6. Learn to communicate results and promote software tool
7. Learn to employ critical thinking in software development



Disciplines

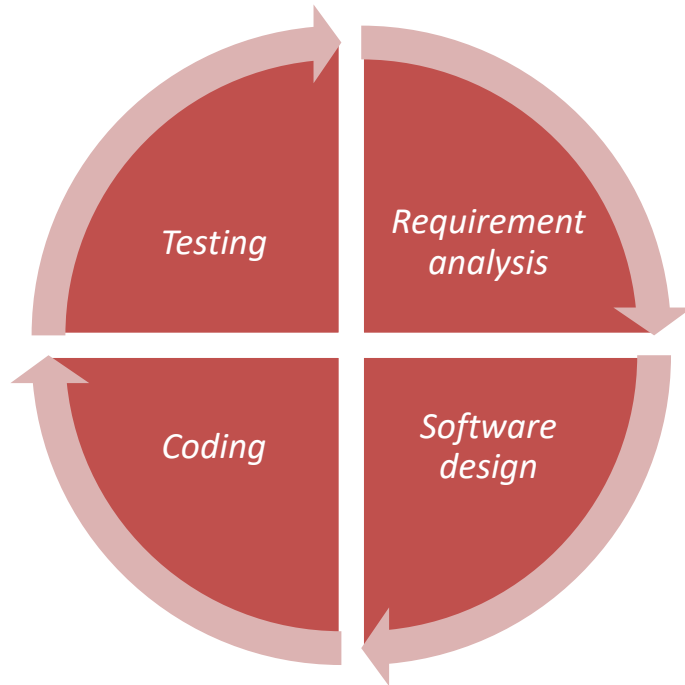
| Now | Future |
|---------------------|----------------------------|
| Programming I | Databases |
| Programming II | Distributed computing |
| Algorithms | Artificial intelligence |
| Advanced algorithms | Computer vision |
| Data structures | Signal processing |
| Software design | Graphics and visualisation |



Objectives

1. Learn to develop a mobile app in Android
2. Integrate multiple disciplines of computer science
3. **Integrate different roles in software development cycle**
4. Learn to work in a team
5. Learn to consider user requirements and market demands
6. Learn to communicate results and promote software tool
7. Learn to employ critical thinking in software development

Development Lifecycle





Objectives

1. Learn to develop a mobile app in Android
2. Integrate multiple disciplines of computer science
3. Integrate different roles in software development cycle
4. **Learn to work in a team**
5. Learn to consider user requirements and market demands
6. Learn to communicate results and promote software tool
7. Learn to employ critical thinking in software development

Teamwork



- Support each other
- Common goal
- Complimentary roles



Teamwork



- Keep the interactions friendly
- Help your teammate if you can
- **Change teams as a last resort**

Teamwork



- Support each other
- Allocate responsibilities
- Be leaders and motivators



Objectives

1. Learn to develop a mobile app in Android
2. Integrate multiple disciplines of computer science
3. Integrate different roles in software development cycle
4. Learn to work in a team
5. **Learn to consider user requirements and market demands**
6. Learn to communicate results and promote software tool
7. Learn to employ critical thinking in software development

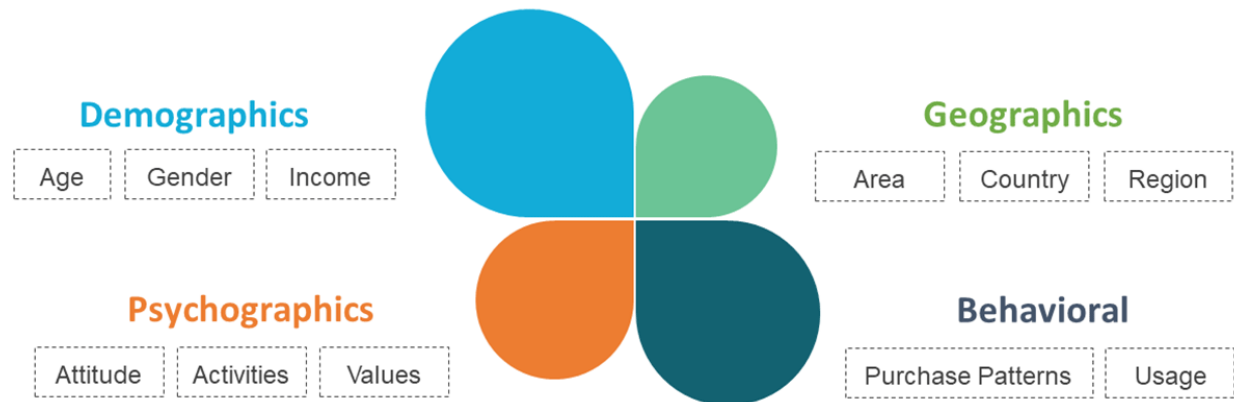
Requirement Analysis

| Accounting Software Requirements Checklist with GAP-Fit Analysis | Importance/Priority | Process (Category) | GAP Analysis | GAP Source (Location) | Requirement Type | GAP Score |
|--|---------------------|--------------------|-----------------|-----------------------|------------------|-----------|
| For HELP, place the cursor in desired column Cell on this row: | | | | | | |
| (Return to Top) | | | | | | |
| MOBILE APPLICATIONS | | | | | | |
| BASIC INFORMATION | | | | | | |
| Do you need mobile payment app to accept credit card payments? | 3 | D | GAP | BP | F | 3.00 |
| Do you need the ability to apply the payment to an invoice once the transaction in ? | 3 | | | | | |
| Do you need to create invoices? | | | GAP PG NG | | | |
| Do you need to automatically send out to mobile users late payments reminders? | | | | | | |
| Do you need the ability to create estimates and quotes? | | | | | | |
| Do you need the ability to track the following: | | | | | | |
| • Payments: | | | | | | |
| • Partial payment: | | | | | | |
| • Overdue invoices: | | | | | | |

Gap Analysis
Indicates the presence and degree of a requirements GAP:

GAP = Full GAP
PG = Partial GAP
NG = No GAP, in use

Market segmentation



Testing

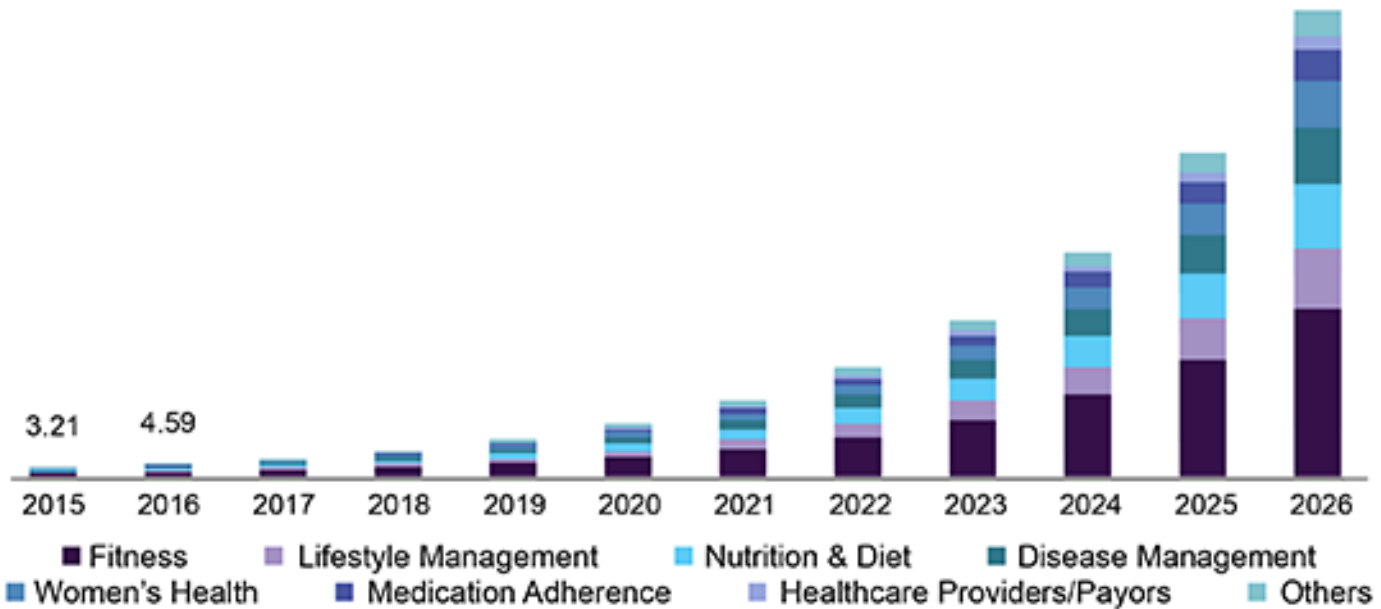
MOBILE APP TESTING CHECKLIST





Market Analysis

U.S. mHealth apps market size, by type, 2015 - 2026 (USD Billion)



Source: www.grandviewresearch.com



Objectives

1. Learn to develop a mobile app in Android
2. Integrate multiple disciplines of computer science
3. Integrate different roles in software development cycle
4. Learn to work in a team
5. Learn to consider user requirements and market demands
6. **Learn to communicate results and promote software tool**
7. Learn to employ critical thinking in software development

Communication Skills



<https://www.youtube.com/watch?v=MnrJzXM7a6o>



Objectives

1. Learn to develop a mobile app in Android
2. Integrate multiple disciplines of computer science
3. Integrate different roles in software development cycle
4. Learn to work in a team
5. Learn to consider user requirements and market demands
6. Learn to communicate results and promote software tool
7. **Learn to employ critical thinking in software development**



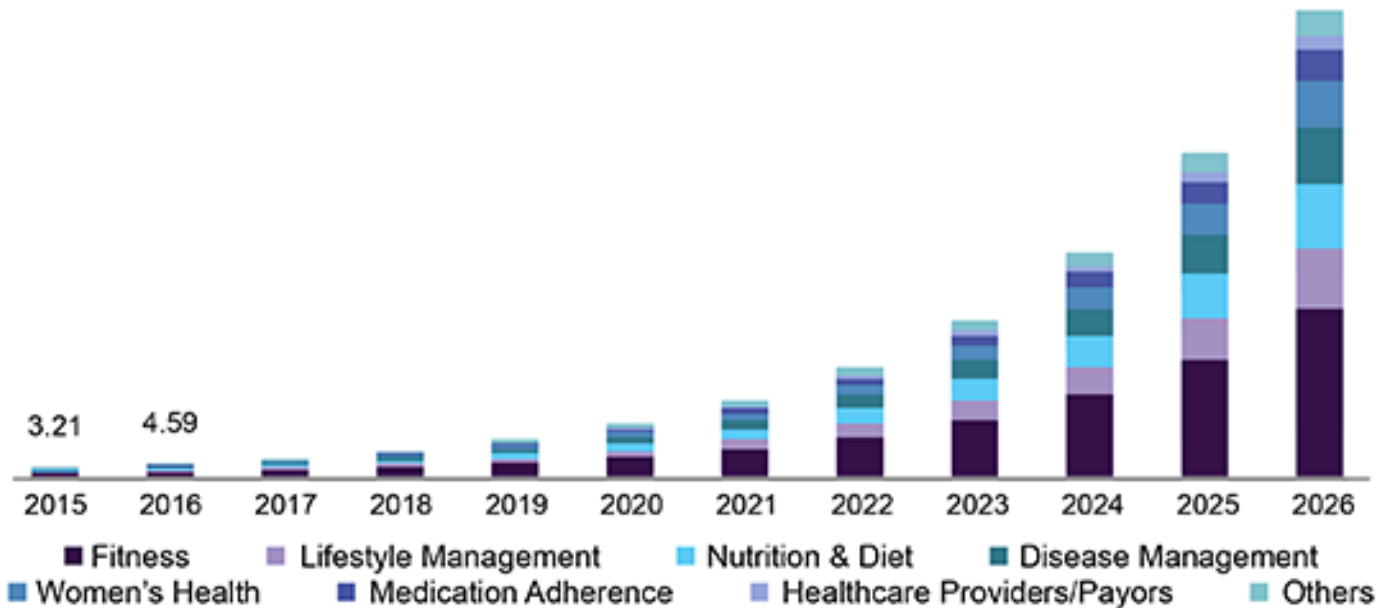
Assessing Success

1. Number of hours of coding per person & per week
2. Percentage of time spent on each discipline
3. Percentage of time spent on each role
4. Distribution of tasks, frequency of interactions
5. User rating. 5-year market value
6. Expected usage or sales
7. Number of changes to the software design



Theme: mHealth

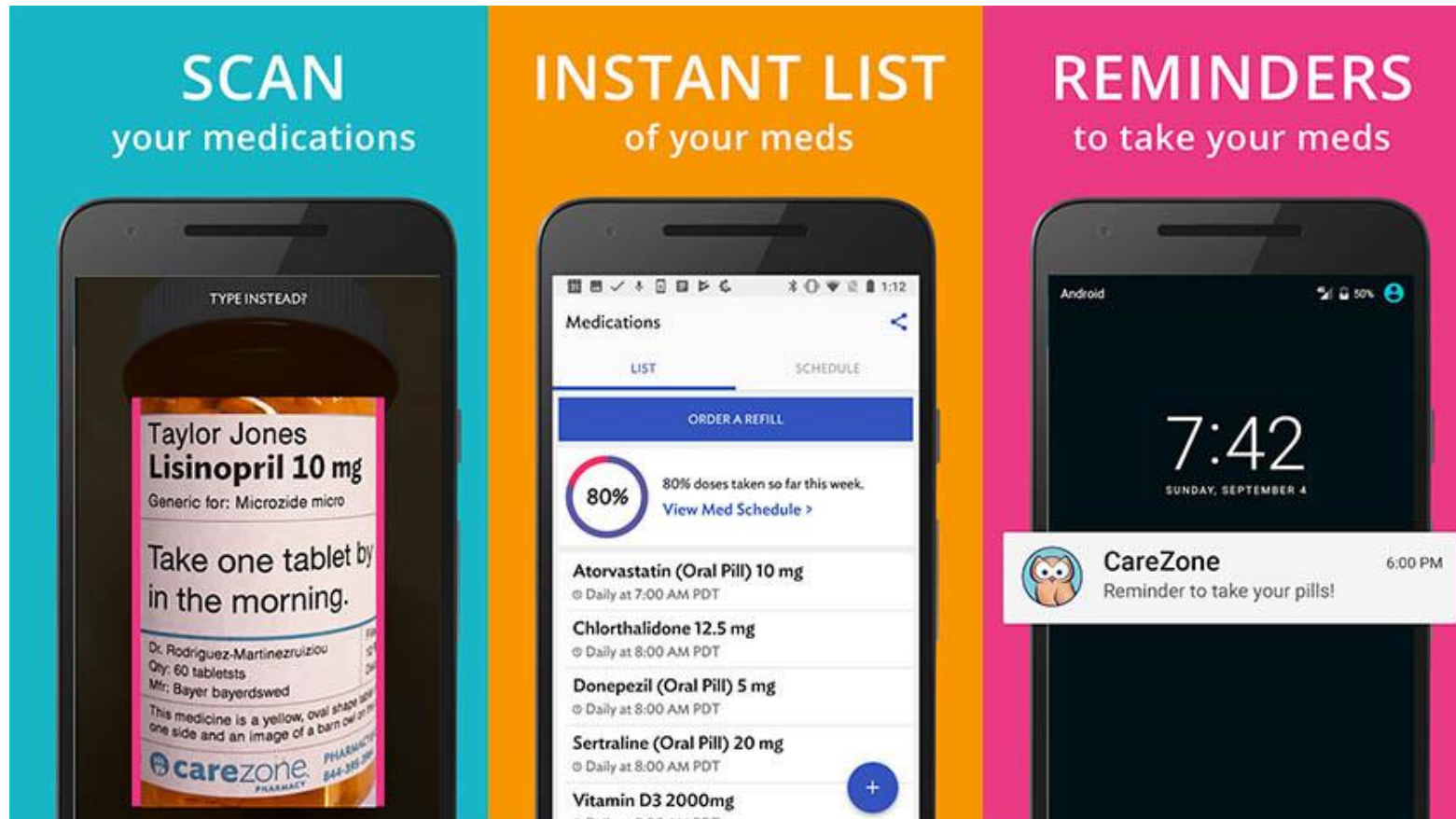
U.S. mHealth apps market size, by type, 2015 - 2026 (USD Billion)



Source: www.grandviewresearch.com

Theme: mHealth

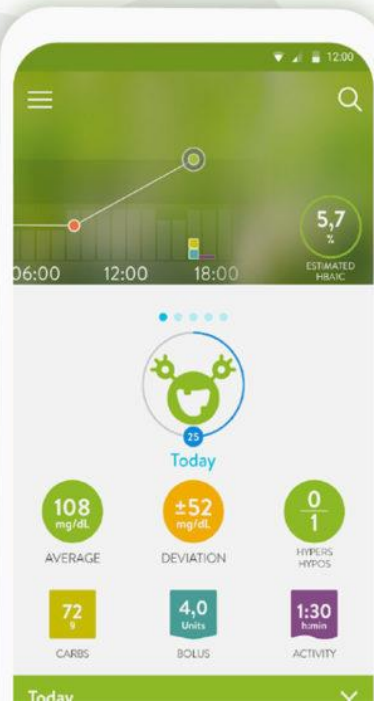
Carezone



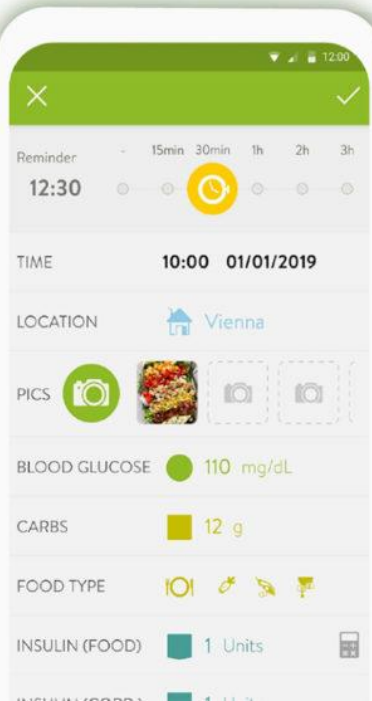
Theme: mHealth

MySugr

Enter your data

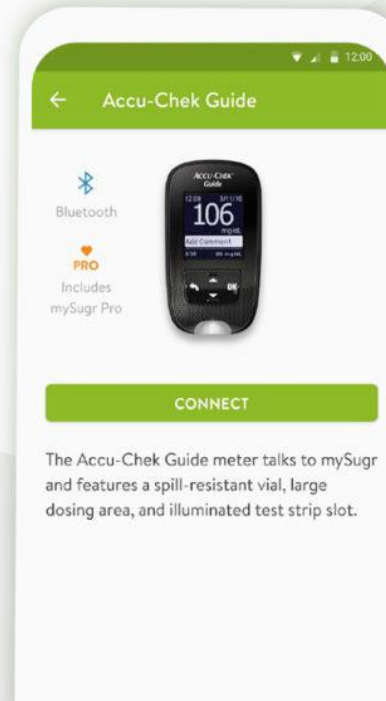


Log your meals



The screenshot displays the 'Log your meals' screen. At the top, a green header contains a close icon and a checkmark icon. Below is a 'Reminder' section with a timer set to '12:30' and a yellow clock icon. Below this is a 'TIME' section with '10:00' and '01/01/2019'. Below that is a 'LOCATION' section with a house icon and 'Vienna'. Below that is a 'PICS' section with a camera icon and a food image. Below that is a 'BLOOD GLUCOSE' section with a green circle and '110 mg/dL'. Below that is a 'CARBS' section with a yellow square and '12 g'. Below that is a 'FOOD TYPE' section with icons for food, drink, and insulin. Below that is an 'INSULIN (FOOD)' section with a blue square and '1 Units'.

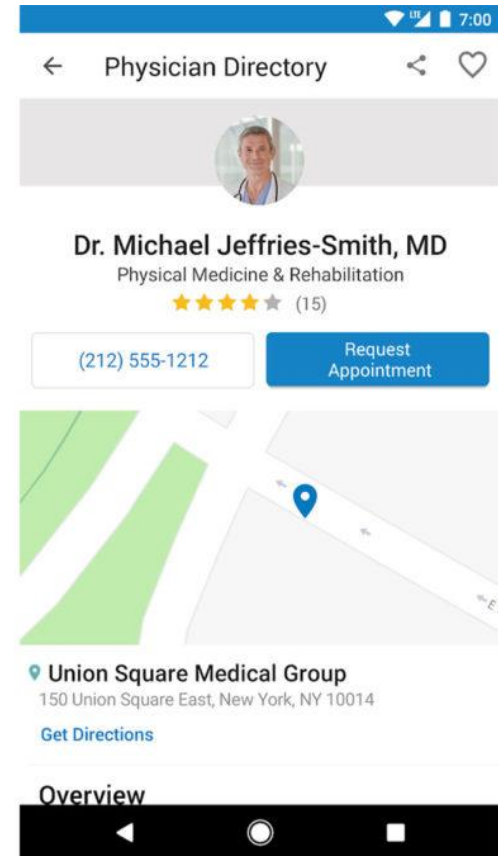
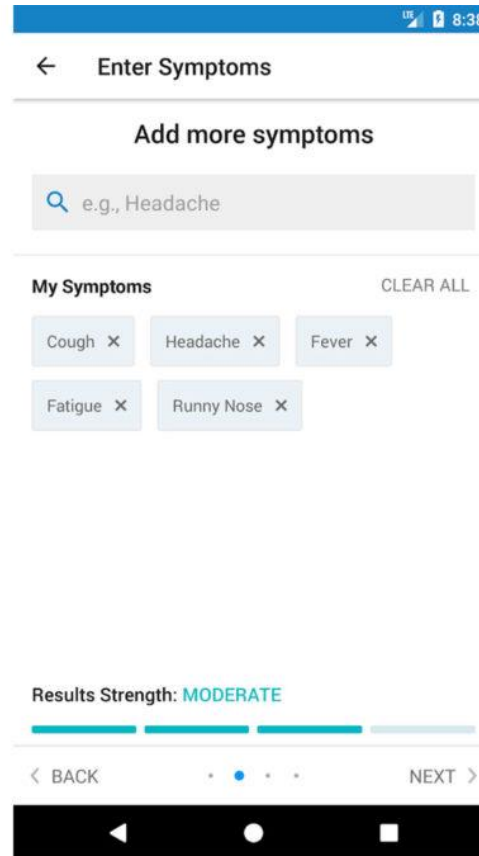
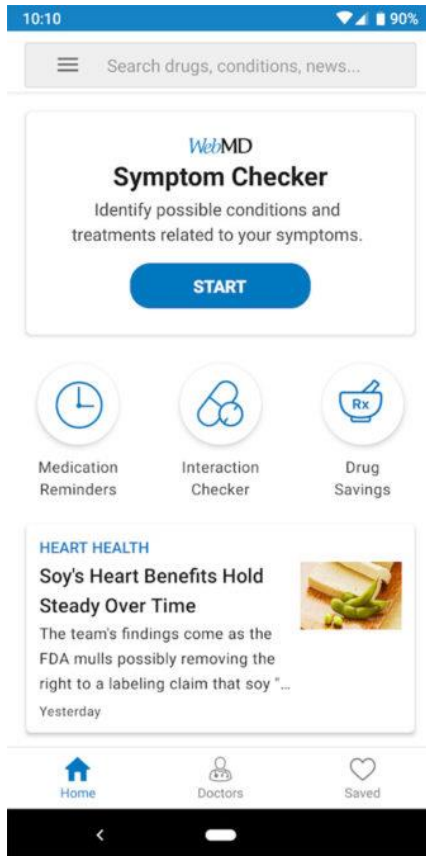
Connect your devices





Theme: mHealth

WebMD





Class Organisation



Class Organisation

- **Theory:** 1.5 hrs per week
- **Labs:** 2.5 hrs per week
 - ✓ Android programming classes and practice
 - ✓ Weekly team meeting to assess plans and progress
- Pre-requisites: Programming I and II, algorithmics, software design, data structures.
- Virtual Campus: <http://campusvirtual.ub.edu>
- GitHub project management



Team



Carlos Martin



Victor Campello



Cristian Izquierdo



Akshay Jaggi



Karim Lekadir

karim.lekadir@ub.edu

Office P2-05



Schedule



Facultat de Matemàtiques i Informàtica

[Tornar](#) | [Tancar](#)

ENGINYERIA INFORMÀTICA

Curs: 2019-2020 Assignatures - Horaris

PROJECTE INTEGRAT DE SOFTWARE

Codi: 364304



Pla docent

| Tipus | Impartició | Crédits | Curs/Semestre | Unitat Acadèmica |
|----------------------|---------------|---------|---------------|----------------------------------|
| Obligatòria del grau | Quadrimestral | 6 | 2 / 2 | Dept. Matemàtiques i Informàtica |

Programació de l'oferta docent del Segon semestre

Activitat

| Grup | Dies | Horari | Professorat | Aula | Idioma |
|------|------|--------|-------------|------|--------|
|------|------|--------|-------------|------|--------|

Teoricopràctica

| | | | | | | |
|----|---------------------|---------|-------------|--------------------------------|-------------------------|--------|
| M1 | dl. dt. dc. dj. dv. | 2n sem. | 11.00-12.00 | Lekadir, Karim | Aula B5 | Català |
|----|---------------------|---------|-------------|--------------------------------|-------------------------|--------|

Pràctiques de laboratori d'ordinadors

| | | | | | | |
|-----|---------------------|---------|-------------|---|-------------------------|--------|
| a00 | dl. dt. dc. dj. dv. | 2n sem. | 08.30-11.00 | Campello Román, Víctor Manuel Martín Isla, Carlos | Aula ID | Català |
| b00 | dl. dt. dc. dj. dv. | 2n sem. | 08.30-11.00 | Campello Román, Víctor Manuel Izquierdo Morcillo, Cristian | Aula IF | Català |
| c00 | dl. dt. dc. dj. dv. | 2n sem. | 08.30-11.00 | Izquierdo Morcillo, Cristian | Aula IF | Català |
| f00 | dl. dt. dc. dj. dv. | 2n sem. | 08.30-11.00 | Campello Román, Víctor Manuel | Aula ID | Català |



Schedule

Exàmens : 1r parcial

| | | | | | |
|----|--------------------|-------------|---|--|---|
| G1 | 1 d'abril de 2020. | 18.00-21.00 | Lekadir , Karim Campello Román, Víctor Manuel Izquierdo Morcillo, Cristian Martín Isla, Carlos | | - |
| | | | | | |

Exàmens : Final

| | | | | | |
|----|---------------------|-------------|---|--|---|
| G1 | 15 de juny de 2020. | 15.00-21.00 | Lekadir , Karim Campello Román, Víctor Manuel Izquierdo Morcillo, Cristian Martín Isla, Carlos | | - |
| | -- | | | Aula IA Aula IB Aula ID Aula IG | |

Exàmens : Reavaluació

| | | | | | |
|----|---------------------|-------------|---|---------|---|
| G1 | 30 de juny de 2020. | 09.00-14.00 | Lekadir , Karim Campello Román, Víctor Manuel Izquierdo Morcillo, Cristian Martín Isla, Carlos | | - |
| | -- | | | Aula ID | |



Calendar

| Week | Date | Topic | Delivery |
|------|--------|-----------------------------|----------------------|
| 1 | 12 Feb | Introduction | Group compositions |
| 2 | 19 Feb | Requirements analysis | Individual proposals |
| 3 | 26 Feb | Healthcare apps | Team proposals |
| 4 | 04 Mar | Proposals analysis | |
| 5 | 11 Mar | Data for healthcare apps | User interface |
| 6 | 18 Mar | Presentations / discussions | |
| 7 | 25 Mar | Best practices | |
| 8 | 01 Apr | Partial exams | |
| 9 | 08 Apr | Semana santa | |
| 10 | 15 Apr | Visit from software company | Software design |
| 11 | 22 Apr | Presentations / discussions | |
| 12 | 29 Apr | Fira d'empreses | Demo |
| 13 | 06 May | Metafest - Infofest | |
| 14 | 13 May | Presentations / discussions | Inter-group feedback |
| 15 | 20 May | Presentations / discussions | |
| 16 | 27 May | Presentations / discussions | Final project |



Groups

- Four students per group.
- All members should contribute to all stages of development.
- Each member should lead one of the four stages of the development.
- Changes to the team are possible if absolutely necessary.
- Remember to work as a team.
- All deliverables should be submitted before Sunday midnight.



Continuous Assessment

| Task | Percentage |
|----------------------------------|------------|
| Individual proposals | 10 % |
| Team proposals | 10 % |
| User interface | 10 % |
| Software design | 10 % |
| Demo (beta) | 10 % |
| Teamwork | 10 % |
| Partial exam (minimum 5 to pass) | 10 % |
| Final project | 30 % |



Unique Assessment

| Task | Percentage |
|-----------------|------------|
| Proposal | 10 % |
| User interface | 10 % |
| Software design | 10 % |
| Final project | 30 % |
| Exam | 40 % |



Hope you enjoy this class !!