



# Mobile Application Development

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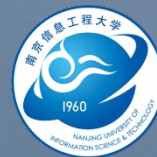
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[nuist.edu.cn](http://nuist.edu.cn)



[setu.ie](http://setu.ie)



# Background & Overview

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## 00: Introduction



A brief talk about myself,  
my background & what this  
module will cover



# Outline

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- ☐ My Background
- ☐ Course Purpose
- ☐ Case Study
- ☐ Course Structure
- ☐ Assessment



# My Background

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- ❑ Gongzhe Qiao(乔臻哲)
- ❑ BEng. of Information Security Engineering, Shanghai Jiao Tong University, China
- ❑ MSc. and PhD. of Cyberspace Security, Nanjing University of Aeronautics and Astronautics, China
- ❑ R&D on Mobile Network / IoT / Risk Assessment
- ❑ Contact details
  - 003969@nuist.edu.cn (email)
  - Bld. Linjiang 临江楼 A1405 (office)



# Course Purpose

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*Introduce **Kotlin** & **Android** application development through a Case Study and targeted practical labs on a week by week basis*



 **Kotlin**  
for Android App Development



# Course Purpose

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*Introduce Kotlin & Android application development through a **Case Study** and **targeted practical labs** on a week by week basis*



## *Assumptions:*

Intermediate level Java or closely related language skills

Accelerate into Kotlin fundamentals as we need them

Every topic explores specific Kotlin features *in parallel* to android code




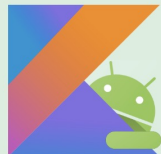
# Case Study

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- ❑ **Placemark** – a Kotlin Android App to keep track of your favourite places (or *placemarks*) to visit.
- ❑ App (Complete) Features
  - Add a Placemark with a ‘title’ and ‘description’ (and photo!)
  - Display a list of all Placemarks to the user AND on a Map
  - Select a particular Placemark and display those details to the user
  - Edit a particular Placemark
  - Store all Placemark data in a JSON file



# Course Structure

<div>00: Introduction</div> <div></div> <div>A brief talk about myself, my background &amp; what this module will cover</div>	<div>01: Kotlin Overview</div> <div></div> <div>A Brief Overview of the Kotlin Language</div>	<div>02: Kotlin Intro I</div> <div></div> <div>A first look at the Kotlin Syntax</div>	<div>03: Kotlin Intro II</div> <div></div> <div>A further discussion on the Kotlin Syntax</div>	<div>04: Kotlin Intro III</div> <div></div> <div>A final discussion on the Kotlin Syntax</div>
<div>05: Android</div> <div></div> <div>Introduce Android ecosystem + "Placemark App"</div>	<div>06: Activities</div> <div></div> <div></div>	<div>07: Adapters</div> <div></div> <div></div>	<div>08: Interfaces</div> <div></div> <div></div>	<div>09: Images</div> <div></div> <div>Working with and displaying Images</div>
<div>10: Maps</div> <div></div> <div>Using Google Maps in our Placemark App</div>	<div>11: Persistence</div> <div></div> <div>saving models to persistent store via json</div>	<div>12: Layouts</div> <div></div> <div>Refactoring our Layouts and UI in Placemark</div>	<div>13: Sensors</div> <div></div> <div>Adding sensor features to your app can enhance user experience by providing...</div>	





# Course Structure – PART 00

00: Introduction



A brief talk about myself,  
my background & what this  
module will cover

Module  
Overview

The Kotlin Language (~3 weeks)



# Kotlin

for Android App Development





# Course Structure – PART 01

00: Introduction



A brief talk about myself,  
my background & what this  
module will cover

01: Kotlin Overview



05: Android



Introduce Android and its  
ecosystem + "Placemark"

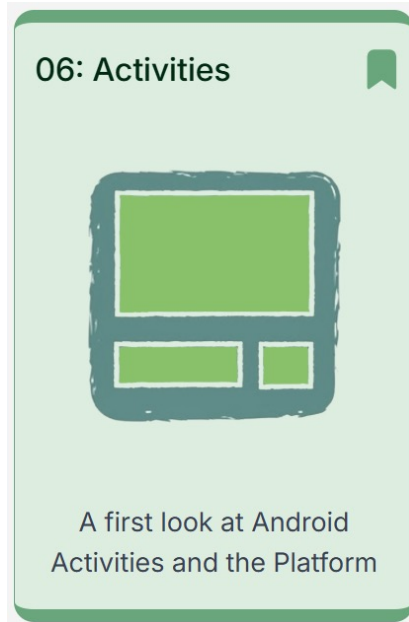
Overview of the  
language

Module  
Overview

Android Studio  
Setup

"Greetings" +  
Skeleton  
"Placemark"  
App

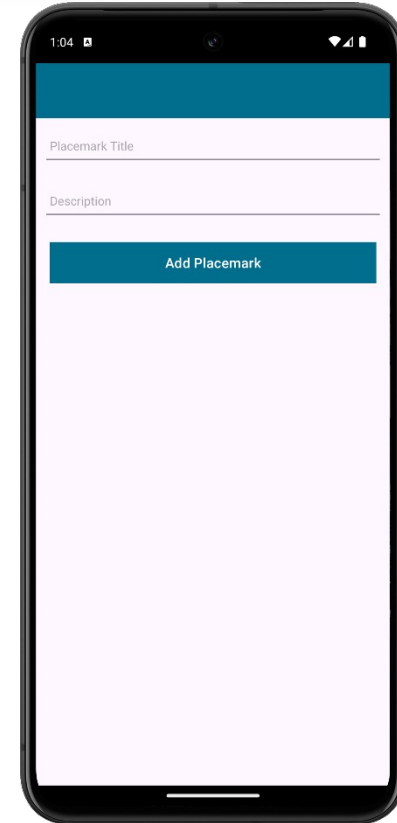




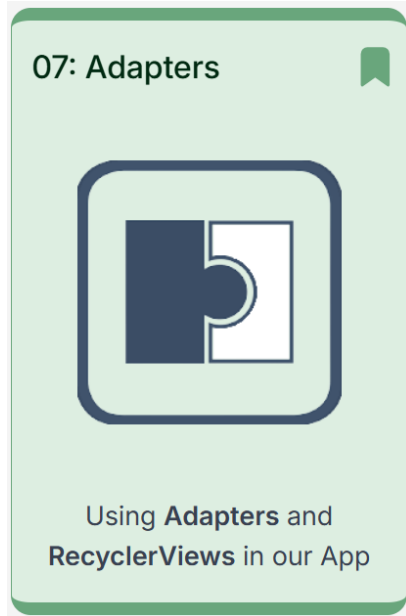
### Single Activity Android Application

Accepts:

- Placemark Title
- Placemark Description

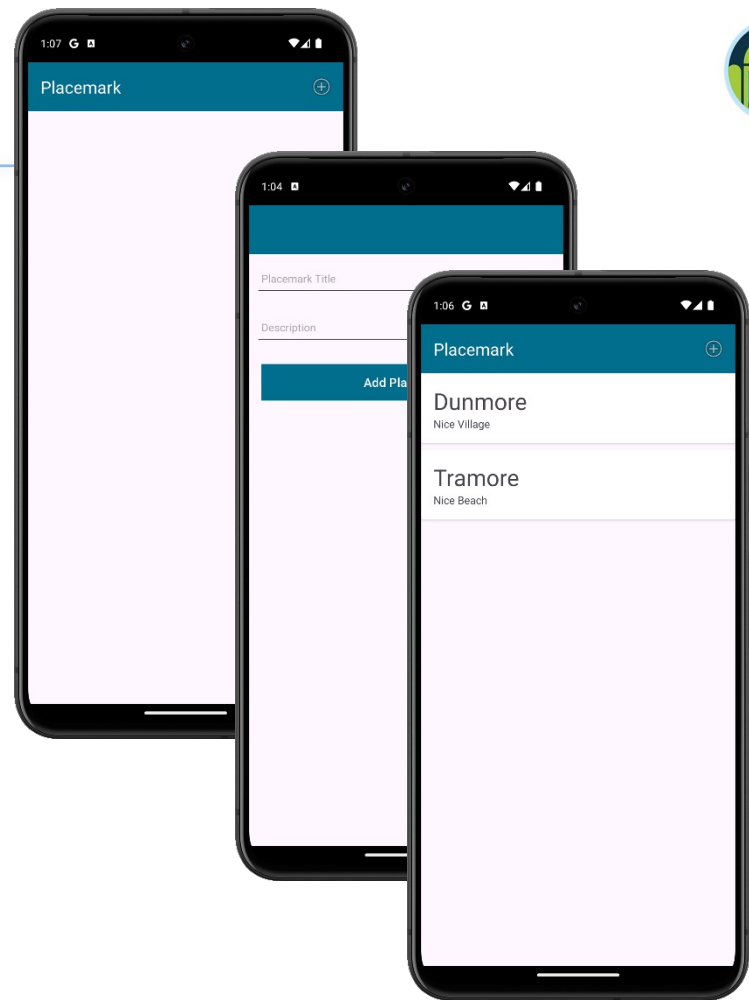


# Course Structure – PART 07

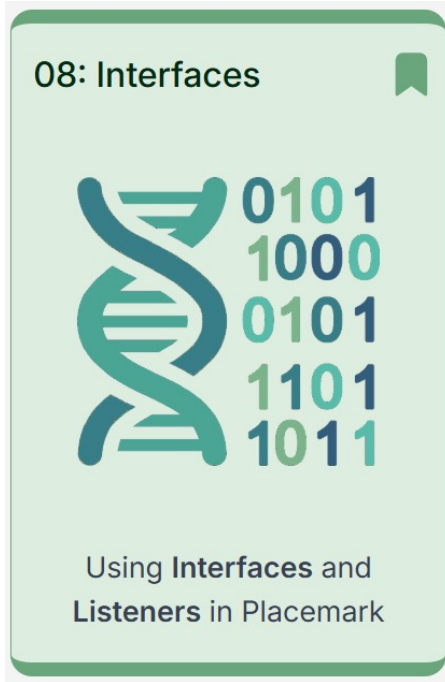


Add Placemark

List All Added  
Placemarks

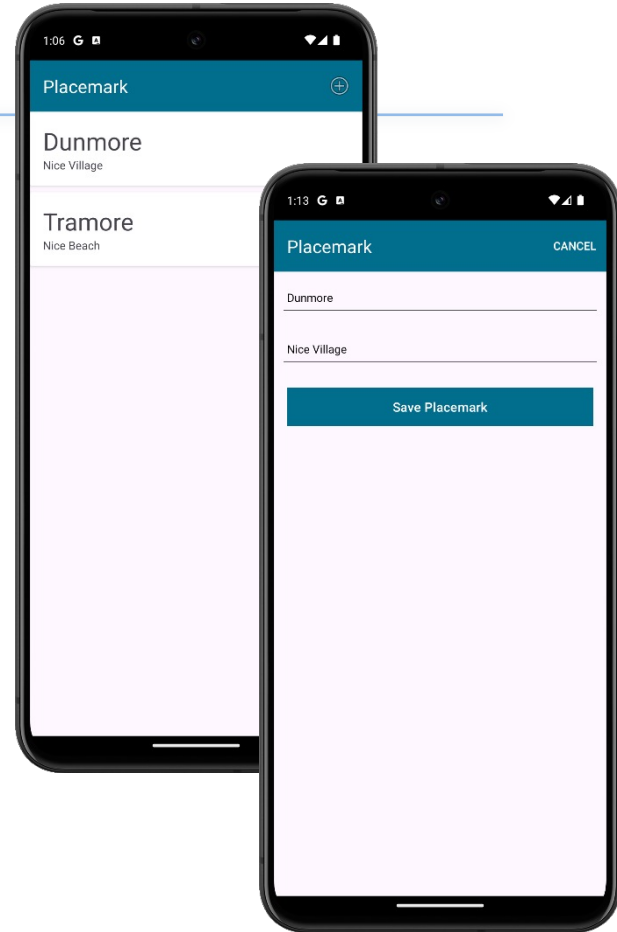


# Course Structure – PART 08

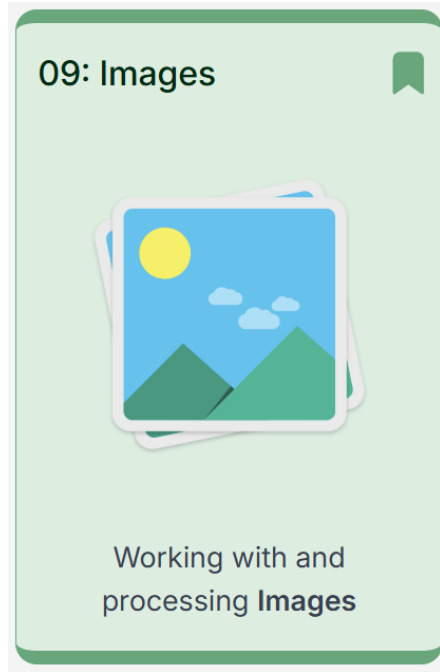


Modify Design

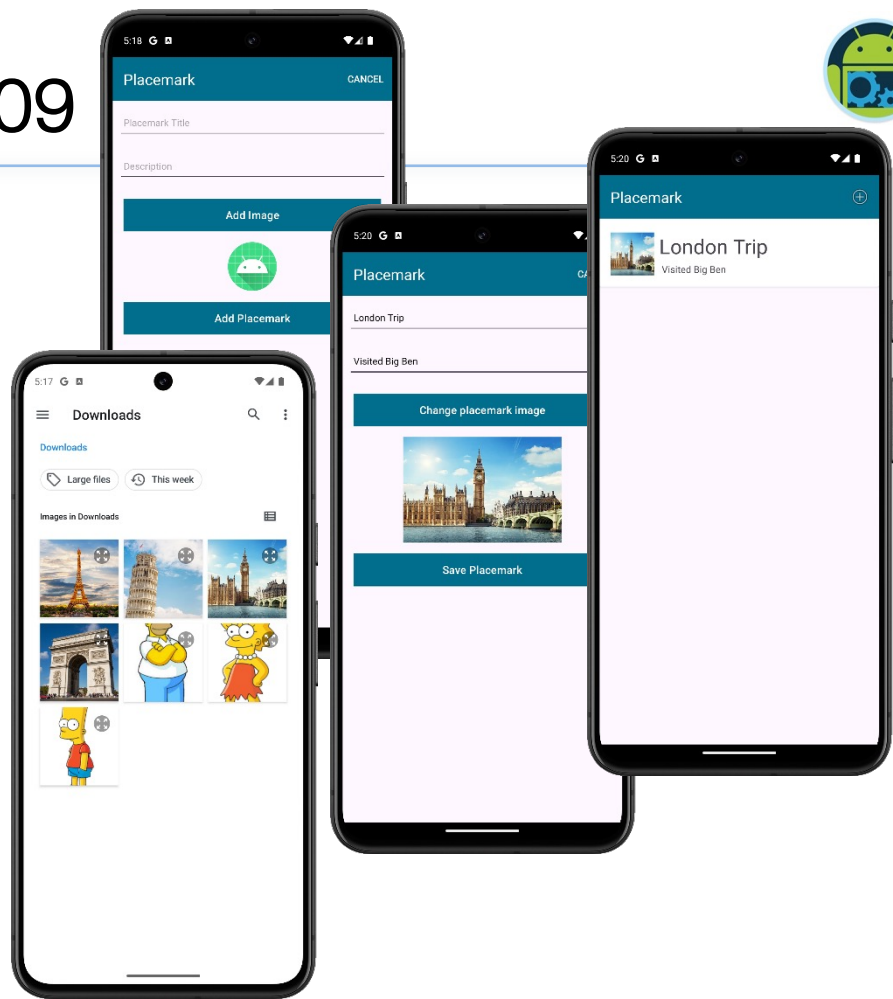
Edit Existing  
Placemarks



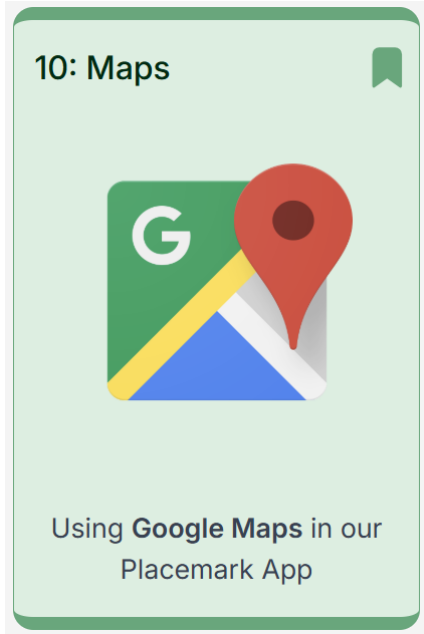
# Course Structure – PART 09



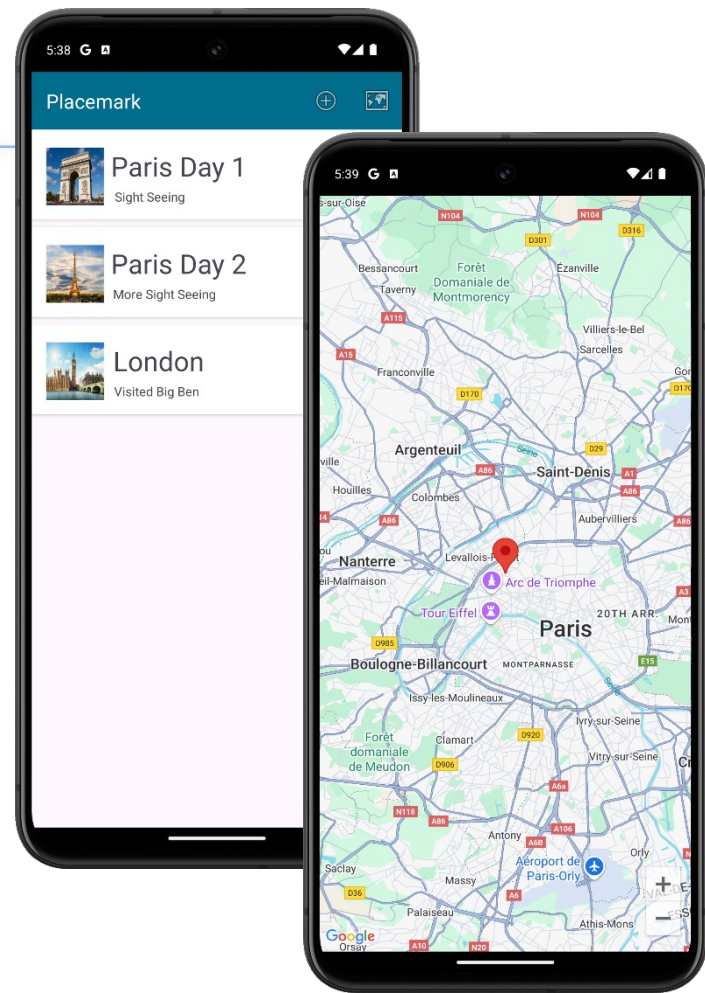
Include  
Images  
in  
Placemarks



# Course Structure – PART 10



Choose  
a Location  
for the  
Placemark



# Course Structure – PART 11

## Save Placemarks to Disk

### 11: Persistence



saving models to persistent  
store via json

Device Explorer

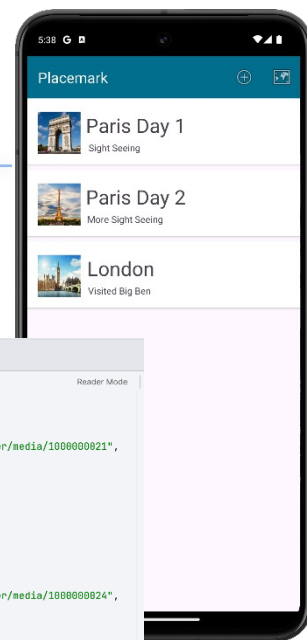
Pixel 8 API 34 Android 14.0 ("UpsideDownCake")

Files Processes

Name	Permissions	Size
> ie.setu.greetings	drwxrwx--x	20 B
✓ org.wit.placemark	drwxrwx--x	20 B
> app_	drwxrwx--x	20 B
> cache	drwxrws--x	20 B
> code_cache	drwxrws--x	20 B
> databases	drwxrwx--x	20 B
✓ files	drwxrwx--x	20 B
> phenotype	drwx-----	20 B
> phenotype_storag	drwx-----	20 B
_m_t	-rw-rw----	20 B
com.google.andro	-rw-rw----	20 B
DATA_ServerCont	-rw-rw----	20 B
placemarks.json	-rw-rw----	2025-02-03 17:38 843 B
profileInstalled	-rw-----	2025-02-03 17:34 24 B

placemarks.json

```
1 {
2   {
3     "description": "Sight Seeing",
4     "id": "-2869802573509701392",
5     "image": "content://media/picker/0/com.android.providers.media.photopicker/media/1008000821",
6     "lat": 48.8646459618057,
7     "lng": 2.3055574670434,
8     "title": "Paris Day 1",
9     "zoom": 11.0
10  },
11  {
12    "description": "More Sight Seeing",
13    "id": "-5357884924577467884",
14    "image": "content://media/picker/0/com.android.providers.media.photopicker/media/1008000824",
15    "lat": 48.86262675160593,
16    "lng": 2.298361076593399,
17    "title": "Paris Day 2",
18    "zoom": 12.0
19  },
20  {
21    "description": "Visited Big Ben",
22    "id": "-8489803401210046913",
23    "image": "content://media/picker/0/com.android.providers.media.photopicker/media/1008000822",
24    "lat": 51.50210216877954,
25    "lng": -0.12712644902210236,
26    "title": "London",
27    "zoom": 13.0
28  }
29 }
```





# Course Structure – PART 12



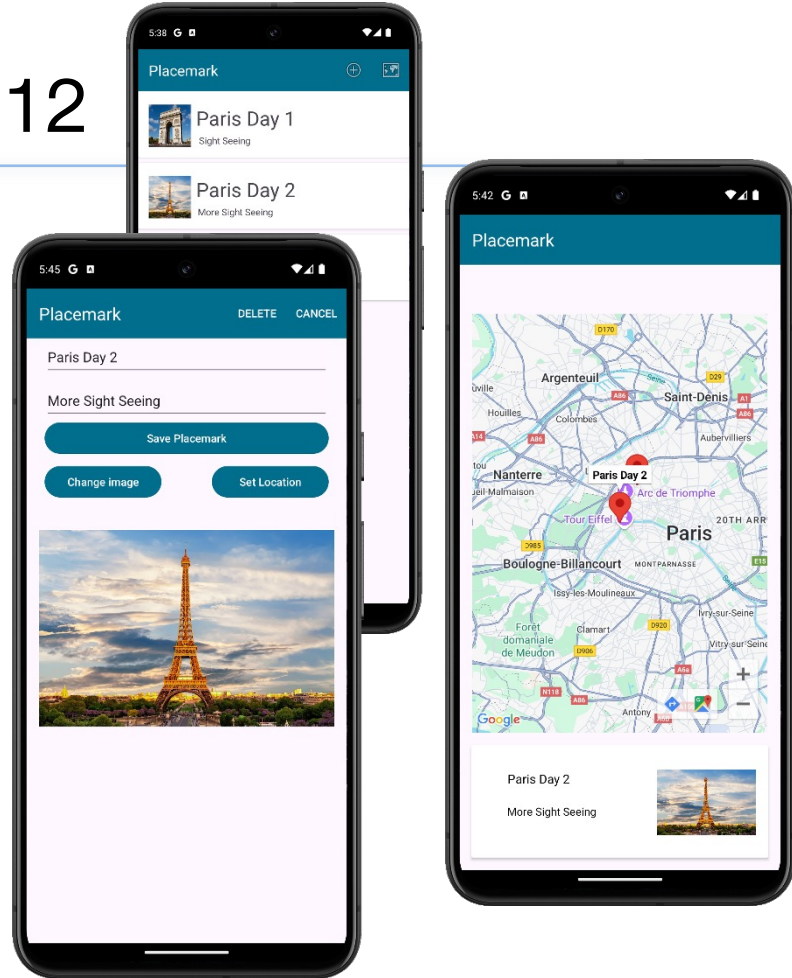
## 12: Layouts



Refactoring our Layouts  
and UI in Placemark

Modify  
Add/Edit

Display All  
Placemarks  
on a Map





# Course Structure – PART 13

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## 13: Sensors



Adding sensor features to your app can enhance user experience by providing...

Modify  
Add/Edit

Display All  
Placemarks  
on a Map



# Assessment \*

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- ❑ 100% Continuous Assessment Module (TBC)
  - 20% - Attendance, assignments & lab reports
    - ◆ We will have 12 lab activities.
  - 30% - Course Project Idea Formation (mid-term)
    - ◆ Mid-term report about your course project plan
  - 50% - Course Project Assessment (end-term)
    - ◆ You will form a team
    - ◆ develop a real app
    - ◆ and showcase it!



# Assessment \*

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- ❑ 100% Continuous Assessment Module (TBC)
  - 20% - Attendance, assignments & lab reports
    - ◆ We will have 12 lab activities.
      - Ideally, we should have tuition -> practice for each PART.
    - ◆ 2 assignments (lightweight).
    - ◆ Individual assessment.
    - ◆ To be confirmed, pay attention to our notice!



# Assessment \*

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## □ About your course project (mid-term + end-term)

- Form your **development team**: 1~3 members. Ideally, you will need **at least**:
  - ◆ 1 UI developer (front-end) + 1 backend developer
  - ◆ Assessment is **team-based**, all credits go to the **team**
  - ◆ A one-person team is fine but **NOT** recommended!
  - ◆ Team formation deadline: **Week 4**



# Assessment \*

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- ❑ About your course project (mid-term + end-term)
  - Before mid-term: you will need a project idea
    - ◆ A short presentation (mid-term, TBC)
    - ◆ A poster about your app (1-page, A3 sized, landscape).
  - Project Ideas MUST be unique AND all your own original work (mostly!)
  - 1<sup>st</sup> come 1<sup>st</sup> served approach to Project Titles
    - ◆ Accepting Project Proposal from Week 4 until mid-term
    - ◆ More details will come later on



# Assessment \*

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- ❑ About your course project (mid-term + end-term)
  - End-term: due 8<sup>th</sup> June 23:59 (end of Week 16)
  - 10% +2% per day deduction for every day late
- Demos & Presentation Week 17, as end-term exam (TBC)
- Attendance is required, absence will have NO SCORE!



# Assessment \*

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□ In summary, you need to:

- Make two **presentations** (1 mid-term + 1 end-term)
  - ◆ One poster
  - ◆ Two slide
- Submit your **source code** (end-term)
  - ◆ A **github** repository (with commit logs!)
  - ◆ A **.zip file**
- Make **demo video** showcasing how it works (end-term)
  - ◆ Up to 5 minutes
  - ◆ A **.mp4 file**





# Assessment \*

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## ❑ FAQ

- Q: Can I develop a game?
- A: Yes. But if you use non-Android IDEs (e.g., Unity3D, UE5, etc.), you have to add **Android features** (i.e., only Android can do, such as sensors, camera, voice control, etc.)



# Assessment \*

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## ❑ FAQ

- Q: What are the marking criteria for my app?
- A: Your app will be evaluated as follows:
  - ◆ **App Idea (mid-term)**: novelty, usefulness, poster design
  - ◆ **UI Design**: following a design guidance, having multiple themes, etc.
  - ◆ **Implementation**: coding style, project management (git log), completeness, functions
  - ◆ **Advancement**: using the-state-of-the-art techniques/features
  - ◆ **Connectivity**: exchanging data with server/other devices
  - ◆ **Showcase (end-term)**: how you showcase your app



# Assessment \*

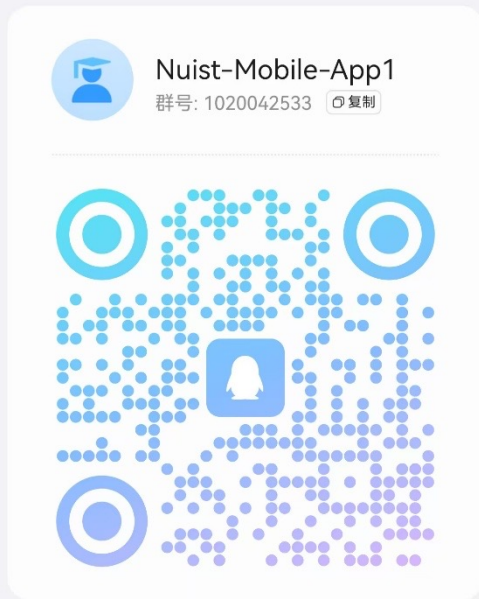
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## ❑ Bonus / awards (TBC)

- Q: What are the marking criteria for my app?
- A: Your app will be evaluated as follows:
  - ◆ We will set multiple awards for your apps (TBC), such as
    - Greatest Of The Year (GOTY)
    - Best Poster Award (mid-term)
    - Most Useless But FUN App
    - Best UI Design Award



# Resources



扫一扫二维码，加入群聊



## 移动应用开发1

课程编号: 11001705 | 教师姓名: 乔墩哲

院校: 南京信息工程大学

学期: 2025-2026第一学期

Chaoxing (学习通)  
You should be already in



# Resources

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❑ Or...take your code and come to my office

❑ Contact details

- [weiweijiangcn@gmail.com](mailto:weiweijiangcn@gmail.com) (email)
- Bld. Linjiang 临江楼 A1406 (office)
- [www.weiweijiang.xyz](http://www.weiweijiang.xyz) (website)

❑ However ...



## Some Questions & Tips

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This is a coding course ...

take your laptop if you can



## Some Questions & Tips

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I don't want to be an SDE,  
why do I need to learn this?

-> Survey



## Some Questions & Tips

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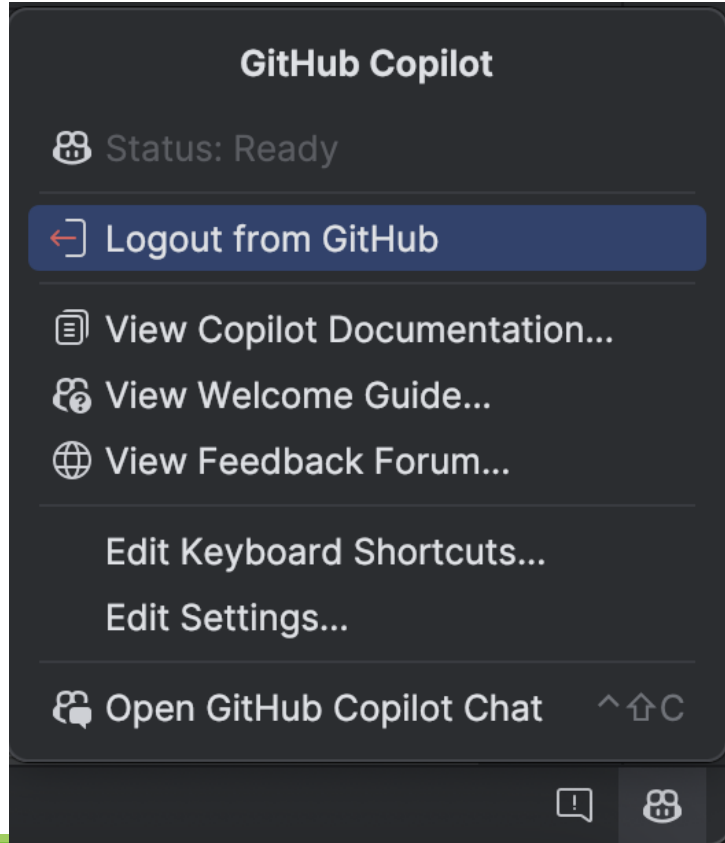
AI can write codes well,  
why do I need to learn this?

-> Survey





# Some Questions & Tips



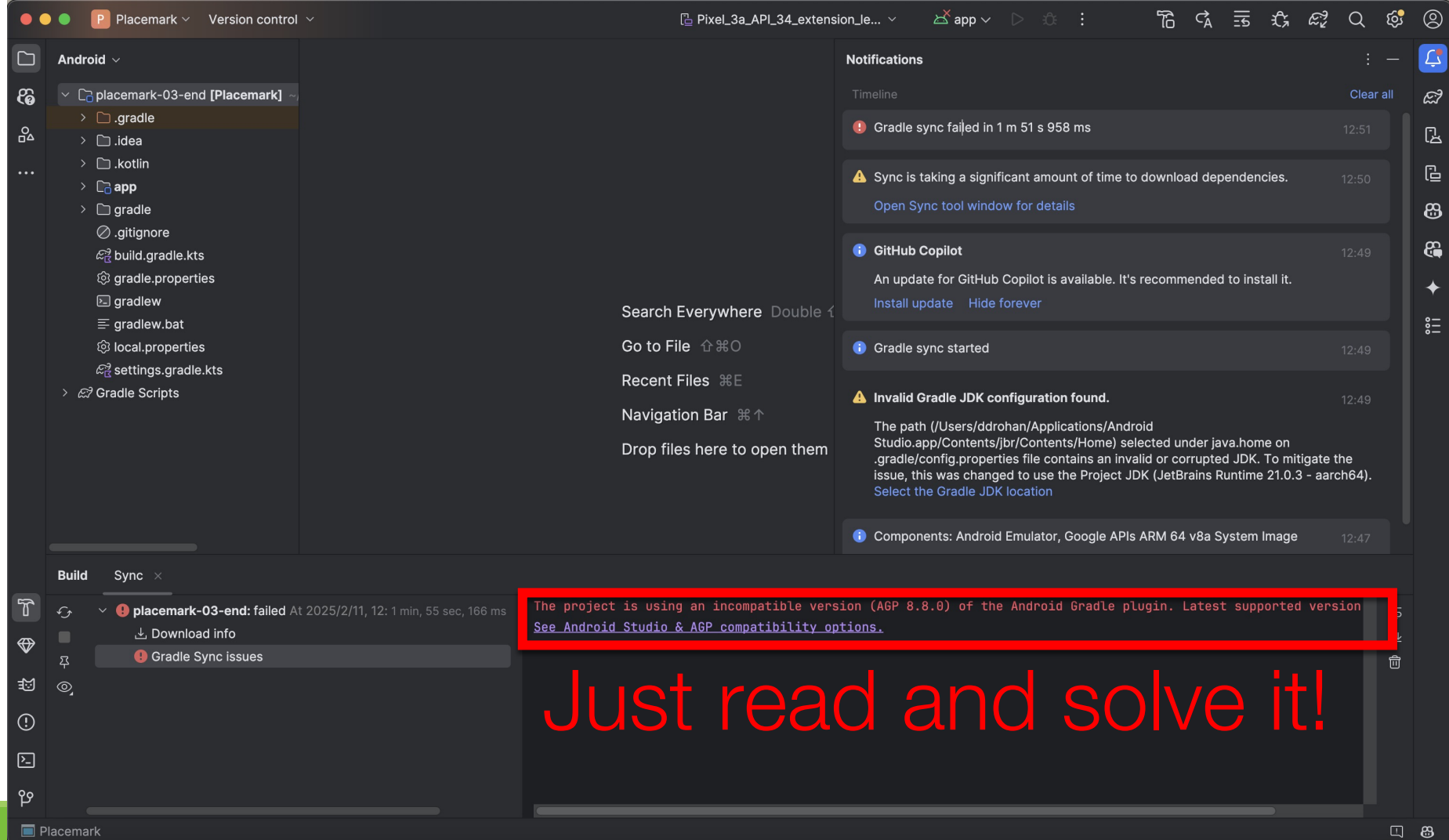
We will cover some AI tools in this course



# Some Questions & Tips

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Errors, errors, errors ...



Just read and solve it!



# Some Questions & Tips

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Before asking for help, you should:

- ☐ **Search online** about your errors, 99.9999...% of your errors are common
- ☐ Or ask AI (how? We will discuss later)

When you ask for help, you are expected to:

- ☐ Describe your errors
- ☐ What you have tried but failed (**important!**)



## Some Questions & Tips

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Engineering is about  
solving problems!

