



MCIoT / WMC

COURSEWORK 2019

Android project

LONDON'S EVENING UNIVERSITY

- **Goal:** Create an outdoors WiFi AP-logging app in the cloud
- Scan for WiFi access points in the vicinity of your phone
 - obtain SSID, BSSID, RSSI and frequency
- Get GPS location
- Write your AP sample and location metadata to a cloud-based database of your choice
 - Include phone ID (your choice), time stamp and location
 - Log the data collected during the scan for APs
- Provide a simple user interface for the app
 - Start/stop logging, configure firebase account, configure frequency of logging, show number of visible WiFi APs, etc

Database choices

- You have two choices:
 1. You can use one of several cloud-based databases offered free of charge by popular cloud providers including Google Firebase, AWS Amplify or Microsoft Azure Mobile
 2. Use your own database running on DCS servers
- In all cases, you need to provide user authentication and at least one table to hold the results of scanning
- Google Firebase is integrated to Android Studio but had major changes recently (so watch out for problems):
 - all Firebase SDKs for Android migrated from the Android Support Libraries to the Jetpack (AndroidX)
 - v3.2.1 or later is required
 - compileSdkVersion to 28 or later is required

Additional Rules (1/2)

- You **must** unit test your code
- You **must** use github for source code management (throughout development i.e. not just upload your final code once at the end)
 - the repository must be set up as a private repository
 - this private repository must be shared with github user `mciot-birkbeck` as collaborator (only Richard and George have access to this account)
 - you may wish to use a GitHub account with an activated student discount (which entitles you to free private repositories) and associated with your `<username>@dcs.bbk.ac.uk` email address

Additional Rules (2/2)

- You **can** use other people's code
 - you can choose to include open source/sample code
 - if so, you need to acknowledge every reused bit
 - you need to respect the license under which it was provided
- **BUT** you are marked only on your own work
- Marks awarded for properly commenting your code

MCIoT students only

- You **must** use:
 - Circle CI or Travis CI for automated testing
- For extra points:
 - Use IndoorAtlas SDK to extend the app to indoors location sensing
 - This can be tested within the main BBK building
 - BBK building was mapped last year
 - Access credentials available upon request (sent request to GR)

- You can work in groups or on your own
 - MSc/MCIoT: up to 2 people per group
 - BSc/WMC: up to 3 people per group
- You are responsible for setting up and running your group
- You have to tell us if the work was split unevenly, otherwise everyone gets the same mark
- No extra marks if you choose to work on your own

What to submit

- Submission accepted only via moodle
- Each student has to submit individually (including those working in groups)
- A single zip file containing:
 - the source code of your project (including all resources)
 - we should be able to use this to rebuild a fully working apk
 - the packaged app i.e. an already created and signed apk
 - a license file
 - a readme.txt file with
 - Github URL
 - Circle CI/Travis CI output (MCIoT only)
 - any additional comments
 - a screenshot from your firebase dashboard showing location traces

- Deadline for submission:
1pm on Friday 4 January
- Cut-off date for submissions:
1pm Friday 11 January (no credit after this date)
- Penalty for late submission:
 - Max credit given at the pass mark for your programme
 - max 50 marks credit for MSc students
 - max 40 marks credit for BSc students

WMC Marking Scheme

- Capturing of WiFi access point and GPS location data. (40 marks)
- Sample and location logging to cloud database. (20 marks)
- Fully implemented user interface. (10 marks)
- Unit tests implemented. (10 marks)
- Code quality and commenting. (10 marks)
- All deliverables submitted to Moodle and GitHub according to specification, and are complete and comprehensive. (10 marks)

MCIoT Marking Scheme

- Capturing of WiFi access point and GPS location data. (40 marks)
- Sample and location logging to cloud database. (20 marks)
- Fully implemented user interface. (10 marks)
- Unit tests implemented. (5 marks)
- CI integration is completed with Circle CI or Travis CI. (5 marks)
- Code quality and commenting. (10 marks)
- All deliverables submitted to Moodle and GitHub according to specification, and are complete and comprehensive. (10 marks)
- Optional element: Use of IndoorAtlas SDK to extend the app to indoors location sensing (20 marks, with total possible mark capped at 100 marks).