code.sprint MT

TASK BOOKLET

Undergraduate Category

2021

PocketSEC

Welcome to the CODESPRINT 2021 competition. During these two days, you will be flexing your coding and UI/UX design muscles to create a mobile app for the educational sector.

1. Design Brief

The Ministry for Education and Employment wishes to develop a mobile app to help teachers and students following Computing at secondary level. The app will benefit any school (state, church, private), but will be focused on students following the MATSEC O-Level syllabus.

The app must have these five main functions:

1. The MATSEC O-Level syllabus document. This should be viewable inside the app itself, i.e. without launching external applications.

2. A guideline document. This document is created as an addendum to the syllabus and explains the syllabus contents in more detail for both teachers and students. Again, this should be viewable inside the app itself.

3. Videos. A list of videos related to the topics covered in the O-Level computing syllabus. Ideally, these videos are to be playable inside the app itself.

4. Map. A map of the Maltese islands, showing locations of Education-related venues, such as schools, the ministry, libraries and so on.

5. A global search function. This will allow the user to search for any text, and then be shown areas of the syllabus and guidelines matching the search term, as well as any related videos and map locations.

2. Technical Guidelines

The method you choose to implement the app is up to you. However, the following technical guidelines are intended to help ensure you stay on the right track.

2.1 Reference Implementation

The judging panel has created a reference implementation of this app in 16 hours. This is to ensure that the task given is possible within the timeframe allocated. A video of this app in operation is available [here](#). We highly recommend that you watch this video carefully, to get an idea of the functionality and level of polish the judging panel is expecting.

2.2 Platform

Your app must run on Android, iOS or both. For the purposes of this competition, having your app run on one of these platforms is acceptable – i.e. your app does not need to be cross-platform.

2.3 Development Environment

You are free to use any development environment you wish. This includes Android Studio (with Java/Kotlin) for Android, and XCode (with Swift/Objective C) for iOS. You may also use other application generators such as React Native, Cordova and Flutter.

The judging panel recommends that developers with limited experience developing apps should stick to native development environments (such as Android Studio and XCode). However, this is not a requirement.

2.4 Sample Data

The MATSEC O-Level Computing syllabus can be found [here](#).

The MATSEC O-Level guidelines document can be found [here](#).

The two documents mentioned above do not necessarily have to be presented to the user in PDF form. Any other format (such as an interactive list of entries with content) is also acceptable. However, due to time constraints, ensure you have enough time to complete data entry for these documents should you decide on this route.

Regarding videos, you are free to choose any videos from Table 1. For the purposes of this competition, presenting 3 videos or more will be considered sufficient.

Video Title	URL
Address, Data and Control Bus	https://bit.ly/2VQ6ghT
Algorithm & Pseudocode	http://bit.ly/2xRaOvb
Analogue vs Digital + Sampling	http://bit.ly/2TS6RyM
Arduino	http://bit.ly/390Ep1K
Binary and Data	http://bit.ly/38Vc50W
Compiler vs Interpreter	https://bit.ly/345GlA5
Computer Processors Explained	https://bit.ly/2xqAGy4
Fetch - Execute Cycle	https://bit.ly/2R7Z3Hw
Full Python Tutorial	https://bit.ly/2XfMrBL
Intro to Programming Languages	https://bit.ly/2yoQWQ2
Languages and Translators	https://bit.ly/39EnCly
Logic Gates	https://bit.ly/2Ull9Ir
Memory Vs Storage	http://bit.ly/2TWilB9
Microprocessors vs Microcontrollers	http://bit.ly/39V5rZN
Number Systems + Positional Notation	http://bit.ly/2wYm3RS
The CPU and Von Neumann Architecture	https://bit.ly/3f4jHCq
What is Python?	https://bit.ly/2XspGef

Table 1: List of videos

Regarding locations, you are free to choose any educative institution from the Table 2 below. For the purposes of this competition, presenting 3 locations or more will be considered sufficient.

Institution	Location
Ministry for Education	https://goo.gl/maps/ag81YeG1U1DcGwiEA
National Library	**https://goo.gl/maps/Gr1p1G9mP9g7tpK8A**
National Public Library	**https://goo.gl/maps/GfKYa5peSJi6FNnB8**
National Sports School	https://goo.gl/maps/kWP7jqSxk8XtbMVg6
Science Centre	https://goo.gl/maps/71PdcxiJiYJbD2PU9
Sir M.A. Refalo Centre for Further Studies	https://g.page/6thformgozo?share
St Ignatius College Handaq Secondary School	https://goo.gl/maps/TVjWqv4KEqNKgh1X9
St Nicholas College, Dingli Secondary School	https://goo.gl/maps/X6tCku29pSb4VAJC6
Visual and Performing Arts School	https://goo.gl/maps/uFarQcqNYk3nDReQA

Table 2: List of Institutions

2.5 Name

PocketSEC is a sample name – you are free to call your app whatever you want 😃

3. Judgement Criteria

Your submission will be given a maximum of 150 points. The criteria by which points are awarded are detailed below. **Note that you do not need to achieve all the criteria**, however, the more criteria you achieve, the greater your chances of winning!

Criterion	Notes	Max Points
Core Functionality		
Ability to view syllabus *(Design brief 1)*	Will only be awarded if the ability works*	5
Ability to view guidelines *(Design brief 2)*	Will only be awarded if the ability works*	5
Ability to watch videos *(Design brief 3)*	Will only be awarded if the ability works*	10
Ability to view map with education locations *(Design brief 4)*	Will only be awarded if the ability works*	10
Global search function *(Design brief 5)*	Will only be awarded if the ability works*	10
UI/UX		
Neat/Aesthetically pleasant user interface	Rather than 'flair', we are looking for a neat, organized and functional UI	10
App is easy to use	The user should not need a manual to use the app	5
App is consistent with chosen platform	For example, an Android app should look and feel consistent with the Android OS and other apps. Points may be deducted for using non-standard UI widgets (such as using HTML widgets in a WebView or UIWebView).	10
App is useable in both portrait and landscape modes		5
App would be useable on other devices such as tablets		5
Code Quality		
Code is organized into packages/modules/units etc.		5
Separation between presentation and logic layers	For example, using MVC or a related model	10
Consistent and correct use of a programming paradigm	Such as OOP, AOP, functional etc.	5
Function cohesion	Functions should be kept small, and do one thing, without being too dependent on other functions	5
Inline documentation	i.e. comments	5

Maintainable code	Ex: use of abstract classes, interfaces, function prototypes etc. Depending on the programming paradigm chosen	5
Additional Functionality/Features		
Sample data is pre-loaded into the application	The app should come with sample data (see section 2.4)	10
Sample data is persistently stored	The sample data should be used to 'seed' the permanent storage mechanism of the app, such as a database or structured file, rather than hard-coded sample data being read every time the app is launched	5
Videos can be played without leaving the app		5
Videos can be shared from within the app	For example, using the mobile OS share sheet/dialog to share the video link	5
Searching for a video places that video in view		5
Searching for a location zooms to that location on the map		5
Searching for a term within the syllabus or guidelines highlights search results		5

* This means that abilities that are partially working, or not working, will be graded zero, regardless of code/design created to support this ability.

Submission Criteria

At the end of the time allocated to this competition, you must submit your code to the judging panel. The code, including all assets and other resources, must be submitted as a folder or compressed archive.

You will also be required to demonstrate your application running either on a mobile device or emulator.

NOTES

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