COMPUTER APP PROGRAMMING (CAP2017)
電腦應用程式比賽 2017

CAP Day
即日解難比賽
(高中)

Regulations:
1. The time limit for this competition is **1.5 hours.**
2. There are two questions in this paper. **Attempt ALL questions.**
3. Follow the instructions in the paper to submit the answers.
4. All candidates must stop their work when the chief invigilator announces "Time up."
5. Candidates can use their own Android device(s) ONLY for program testing purposes.
6. Candidates must not search for similar apps through the Internet (i.e., the answers must be based on your own work).
7. If a candidate is found cheating or violating the regulations by any means, he/she will be disqualified from the competition immediately.

比賽守則：
1. 本比賽限時 **1.5 小時**。
2. 本卷共有兩個題目，**需全部作答**。
3. 請依照試題上的指示，完成答卷。
4. 當考場人員宣布「比賽結束」的時候，所有參賽者必須停止作答。
5. 參賽者可以自備 Android 裝置，但只能用作測試程序。
6. 參賽者不得在互聯網搜尋相關的應用（所有答案必需是參賽者自己作答）。
7. 若發現任何參賽者作弊或違反比賽守則，將被即時取消參賽資格。

Question 1: Save the project as "Question_1". 請開新專案，命名為"Question_1"。
Question 2: Save the project as "Question_2". 請開新專案，命名為"Question_2"。

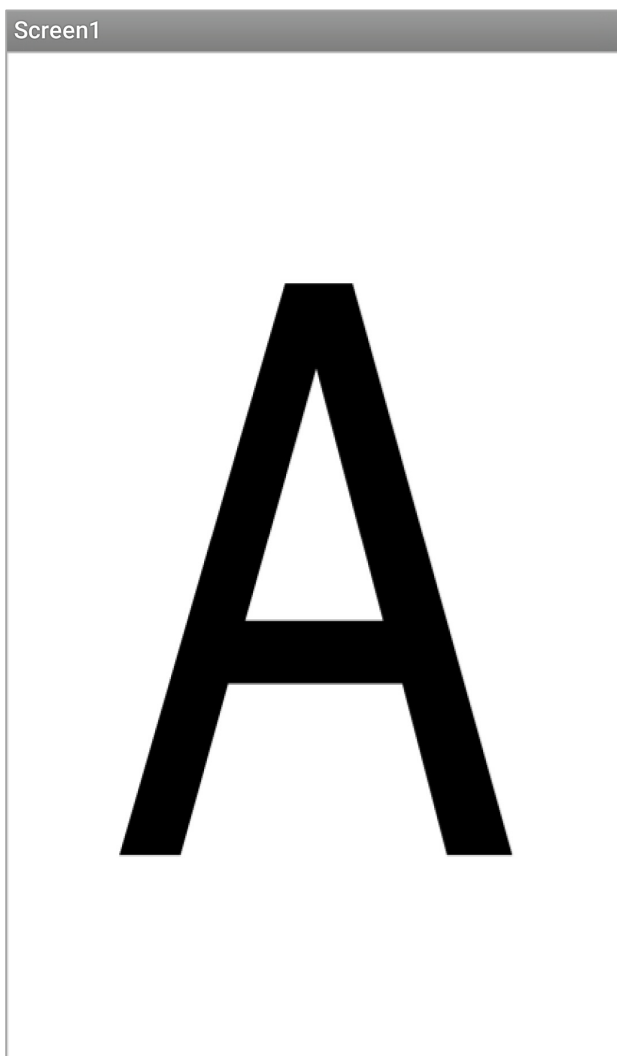| School name			
Student name			
Google account			
Question_1: File saved time		**Completion percentage**	
Question_2: File saved time		**Completion percentage**	

Note: By participating in the competition, you agree to follow the rules and regulations of CAP2017 and to allow the organizers to publish your name and your school name in CAP2017-related materials.
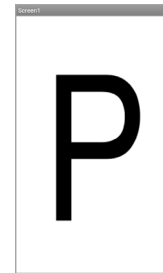
Question 1

There are 7 characters: **C A P 2 0 1 7**. The images can be downloaded from http://cap.comp.polyu.edu.hk/download.html. When a user taps the screen once, his/her phone will display the image of the next letter. When a user taps the screen twice (double taps, 連點兩下), the phone will display the previous letter.

Only when the user taps twice within 0.5 seconds, the action will be counted as 'double tap' （0.5 秒內點擊兩下才算是「連點兩下」）.
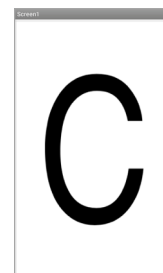
After an image is changed, the app should also read the sequence of the image to the users. For example, if **A** is shown, the app should read "*This is the second image*". If **1** is shown, the app should read "*This is the sixth image*". If there is no more image, the app should read "*There is no more image*".

Tap the screen once to display and read the next letter. A→P （點擊螢幕一下，便會顯示和讀出下一個字母）

Tap the screen twice to display and read the previous letter. A→C（點擊螢幕兩下，便會顯示和讀出上一個字母）

For the last character (i.e., 7), if the user taps once, the app should tell the user that there is no more image. （當最後一個字母顯示時，點擊螢幕一下，便會提示沒有更多圖片。）

For the first letter (i.e., C), if the user taps twice, the app should tell the user that there is no more image. （當第一個字母顯示時，點擊螢幕兩下，便會提示沒有更多圖片。）

Question 2

Develop an app to count the number of occurrences of a given substring in a paragraph. For example, consider the following sentence:

"The actor left three things in the theatre this Thursday."

If you count the occurrence of the substring 'th', the answer is seven. If you count 'he', the answer is three.

Note that the counting is case-insensitive （不論大細階都計算）. If the input is null (i.e., no character) （無有輸入任何字）, the count should always be zero.

Screen1
The actor left three things in the theater this Thursday.
th
Count Substring
Result: 7

When a user clicks the button 'Count Substring', the app should count the number of occurrences of the substring in the original text.

The result should be shown at the result label.