112 學年度第一學期 演算法 第三次作業

1. Problem: **Dictionary**
   利用 Binary Search Tree (**BST**), Splay Tree (**SPT**), and Treap 分別建構相對應的 Dictionary，並且利用該 Dictionary 做 Searching 以及其時間分析，包括分析查詢的時間、成功率與失敗率等；此外，亦要討論 Dictionary size and Searching file size 與執行時間與效率的關係!

   Functions:
   i. Build BST, SPT, and Treap with a Text File Input `test.txt`
       a. 定義 Token & Words in Dictionary
   ii. Searching with an input test file, part of the Text File `test.txt`
   iii. Search a word (input from file or keyboard)
   iv. Add a word (input from file or keyboard)
   v. Delete a word (input from file or keyboard)

2. 繳交檔案分別為
   i.   Dictionary_Report_學號.doc   (完整報告)
   ii. Dictionary_Prog_學號.c   (Dictionary 程式 C, C++等)
   iii. Dictionary_Prog_學號.exe   (Dictionary 執行檔)
   iv. TestFile1.txt & TestFile11.txt, TestFile12.txt, …   (Test 1 set)
   v.   TestFile2.txt& TestFile21.txt, TestFile22.txt, …   (Test 2 set), …

3. 報告內容完整性：
   i.   簡介及問題描述
   ii. 理論分析
   iii. 演算法則
   iv. 程式設計語言、工具、環境與電腦硬體等規格說明
   v.   程式 (含 source code, test files)
   vi. 執行結果與討論 (功能討論、執行效率、BST, SPT, and Treap 應用等討論)
   ❑ 完整報告與程式(source code, test files, and executable code)經壓縮後(RAR or ZIP)，依規定時間內上傳至教學網站。

4. **作業繳交日期： 112/12/12 23:59 前** (上傳至教學網站, It is hard deadline)

5. 遲交以 0 分計算，除特殊情況。

6. 下兩頁為一輸入的範例，同學可自行上網找英文文章範例。繳交作業時，務必上傳至少兩組的測試範例組(每一組須包含一字典檔案&三個搜尋檔案範例)。

Input Files: (for examples)

`TestFile1.txt` (建構字典的輸入檔)

SINGAPORE: Tai Tzu Ying cemented her status as the world's top female shuttler as she beat reigning Olympic champion and world number two Carolina Marin in straight games at the Singapore Open on Sunday (Apr 16).

World number one Tai took just 38 minutes to seal a clinical 21-15, 21-15 victory at the Singapore Indoor Stadium.

It was Tai's fifth consecutive Super Series title and her second victory over Marin in less than two weeks, having already triumphed at the Malaysian Open final.

The usually unflappable Marin had no answers to Tai's excellent defensive work and quick smashes as the diminutive 22-year-old edged ahead at 13-10 and eventually took the first game.

The Spaniard still failed to find her rhythm in the second, as a composed Tai dictated the pace and saw out the game comfortably.

Tai said she was pleased with her performance but unfazed by her Super Series streak.

"I know I wouldn't be able to beat Marin easily, so I was very patient when playing with her. I felt that I played quite well today," she told reporters.

"I think everyone around me is more concerned about these five titles. But for me, I just want to play well in every tournament."

It was Tai's first title in the city-state and she did not drop a game all tournament.

In the men's singles title, India's B. Sai Praneeth beat compatriot Srikanth Kidambi 17-21, 21-17, 21-12 for the first Super Series title of his career.

Praneeth, the world number 30, said he was pegged back by a slow start but refused to give up. "When I got my strokes going good and I got some rhythm, I thought 'OK, the game is still on.'"

"This is the best feeling: I had been waiting for a long, long time," he added.

In the opening mixed doubles match, China's Lu Kai and Huang Yaqiong beat Thailand's Dechapol Puavaranukroh and Sapsiree Taerattanachai 19-21, 21-16, 21-11.

There was double joy for Denmark as they claimed both the men's and women's doubles.

Christinna Pedersen and Kamilla Rytter Juhl beat Misaki Matsutomo and Ayaka Takahashi of Japan 21-18, 14-21, 21-15, while Mathias Boe and Carsten Mogensen beat Li Junhui and Liu Yuchen of China 21-13, 21-14.

The tournament saw its fair share of upsets early on, with defending men's and women's singles champions Sony Dwi Kuncoro of Indonesia and Ratchanok Intanon of Thailand dumped out on Wednesday.

Kuncoro succumbed to South Korea's Lee Dong-Keun while world number eight Ratchanok was beaten by Japan's Sayaka Sato.

Olympic bronze medallist Viktor Axelsen of Denmark was shown the door on the same day, falling in three sets to Hong Kong's Vincent Wong.

TestFile11.txt （輸入到字典查詢的範例檔案 1，需分析查詢的時間、成功率與失敗率等)

It was Tai's fifth consecutive Super Series title and her second victory over Marin in less than two weeks, having already triumphed at the Malaysian Open final.

TestFile12.txt （輸入到字典查詢的範例檔案 2，需分析查詢的時間、成功率與失敗率等)

game game game game game game game game game game game game game game world

TestFile13.txt （輸入到字典查詢的範例檔案 3，需分析查詢的時間、成功率與失敗率等)

Saina Nehwal lost in straight games to world no. 1 Tai Tzu Ying in the French Open 2018 women's singles quarter-finals on Friday. Saina Nehwal, who has been in fine form for the last couple of weeks, was looking to avenge her Denmark Open final loss against Tai Tzu Ying. The Chinese Taipei now has an overwhelming 14-5 head-to-head record against the Indian. In the men's singles quarter-finals match, Kidambi Srikanth lost to world no.1 Kento Momota in a closely-contested match. In a match that lasted 52 minutes, Srikanth lost 16-21, 19-21.