**CPP程式設計題**

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| **命題者︰TWK** |
| **題目名稱(中文/英文)：Compute the square root** |
| **主要測試觀念：** 算式計算   |  |  | | --- | --- | | **Basics** | **Functions** | | * C++ BASICS 1 * FLOW OF CONTROL * FUNCTION BASICS * PARAMETERS AND OVERLOADING * ARRAYS * STRUCTURES AND CLASSES * CONSTRUCTORS AND OTHER TOOLS * OPERATOR OVERLOADING, FRIENDS,AND REFERENCES * STRINGS * POINTERS AND DYNAMIC ARRAYS | * SEPARATE COMPILATION AND NAMESPACES * STREAMS AND FILE I/O * RECURSION * INHERITANCE * POLYMORPHISM AND VIRTUAL FUNCTIONS * TEMPLATES * LINKED DATA STRUCTURES * EXCEPTION HANDLING * STANDARD TEMPLATE LIBRARY * PATTERNS AND UML | |
| **題目說明：** The Babylonian algorithm to compute the square root of a positive number n is as follows:  1. Make a guess at the answer (you can pick n/2 as your initial guess).  2. Compute r = n / guess .  3. Set guess= (guess + r) / 2.  4. Go back to step 2 for as many iterations as necessary. The more steps 2 and 3 are repeated, the closer guess will become to the square root of n.  Write a program that inputs a double for n, iterates through the Babylonian algorithm until the guess subtract the previous guess smaller than 0.01, and outputs the answer as a double to two decimal places. Your answer should be accurate even for large values of n.  **輸入說明：**391.00  **輸出說明：19.77**  **IO範例 :**   |  |  |  | | --- | --- | --- | |  | **Sample Input** | **Sample Output** | | 第一組測資與輸出 | 400.5 | 20.01 | | 第二組 | 65189451651.5192165 | 255322.25 | | 第三組 | 1894651654984.11318 | 1376463.46 | | … |  |  | |
| **附屬資料︰**  🗹解答程式： ComputeSQRT.cpp(檔名)  🗹測試資料：input.txt, output.txt |
| ◼ 易，僅需用到基礎程式設計語法與結構   * 中，需用到多項程式設計語法與結構 * 難，需用到多項程式結構或較為複雜之資料型態或結構 |
| **解題時間：15**分鐘。 |
| **其他註記：** |