

2024 Spring Object-Oriented Programming

HW5

Account numbers across many companies and institutions adhere to a standard which contains an algorithm to validate the account number against accidental incorrect input.

For a given account number, the following algorithm will validate if the account number is valid:

1. Split the number up into its individual digits
2. Starting from the rightmost second-least significant figure, double every second digit. If the result of doubling the number is greater than 9, then subtract 9 from the number.
3. After doubling every second digit, calculate the sum of all the digits
4. If the sum modulo 10 is 0, then the account number is correct; otherwise it is incorrect

Write a class called `AccountNumber`. The class should store an account number as a pointer to an array of type `int`. The constructor should accept as input a pointer to an array of type `int` and an integer containing the size of the array.

You should include a member function for checking if the account number is valid using the algorithm outlined above. This method should create a temporary dynamic array to perform the account number validation. Ensure that you delete the dynamic array before the function. You should also include another member function which, if the account number is not valid, will find a value for the least significant digit which makes the account number a valid number. Write a test driver program which tests your class with valid and invalid account numbers of varying length.

規則:

1. 若有使用 `dynamic array`，請務必要 `delete`。
2. 請一定要使用 `class` 來撰寫。
3. 若帳號不正確，請找出正確的帳號。

輸入說明:

以 `cin` 方式輸入，1.帳號長度 2.帳號

輸出說明:

以 `cout` 輸出，若帳號正確，請輸出"Account number is valid."以及"Account Number:ex.28126"，若帳號不正確，請輸出"Account number is not valid."以及"Correcct Account Number:ex.28126"。最後不需要換行符號

Note:

1. 本次作業和 `file I/O` 無關。
2. 務必注意 `cout` 出的大小寫、空格、換行等，會影響 `online judge` 的通過與否。
3. 測資裡的帳號只會是數字組成，不會出現其他情況。

Sample Case:

Correct account

```
Please enter the account's length:5
Please enter your account number:28126
Account number is valid.
Account Number:28126
```

Incorrect account

```
Please enter the account's length:6
Please enter your account number:789635
Account number is not valid.
Correct Account Number:789636
```

Submission - Deadline: 2024/4/1 23:59

- 請將程式碼(.cpp 檔)上傳至 E3 作業繳交區
- 程式碼命名: studentID_HW3.cpp (e.g. 112511000_HW3.cpp) ***命名方式錯誤將斟酌扣