Department Name	**Final Exam C Introduction Lab (IT3220)** *ICT-20181 term – 90 minutes – Lecture notes and lab slides can be used* *(If copying other students' source code, you will get F grade)*	**TERM 2018-1**
	Name: ..... ID: …… Class	

Write a program to solve four problems below and show a menu to choose problems. After testing 1, 2, 3, or 4 problem, the program must return to the main menu to choose the next problem (2.0 points). For example:

1. *Frequency*
2. *Fibonacci*
3. *Password*
4. *Date*
5. *Exit*

Problem 1 – Frequency (2.0 points): Write a function to input an integer *n* (n≤20) and a list of *n* non-negative integer numbers. Output each number and its appearance frequency in the list separated by a space in each line. For example:

Input	Output
5 1 5 4 9 4	1 1 5 1 4 2 9 1

Problem 2 – Fibonacci (2.0 points):

Fibonacci is a sequence of integer numbers in which the value of number is the sum of two previous numbers in the sequence. This rule is applied from the third number: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55. Write a function to input an integer n (n≤30) and output the n^{th} Fibonacci. Note that students must use a loop to calculate Fibonacci numbers and a recursive algorithm is not allowed. For example:

Input	Output
1	0
6	5

Problem 3 – Password (2.0 points):

Write a function to check the safety of a password. Output *True* if the password satisfies following requirements and *False* if not satisfying:

- Having at least 10 characters
- Having at least one digit
- Containing at least one uppercase letter and one lowercase letter
- Contains only ASCII latin letters or digits

For example:

Input	Output
bAse730onE	True
A1213pokl	False

Problem 4 - Date (2.0 points):

Write a function to input a date with the format of dd/mm/yyyy. Output the next date of the input date. Note the you must use a structure to declare a date.

If the date does not exist, you must output *INVALID*.

For example:

Input	Output
14/11/2016 32/12/2018	15/11/2016 INVALID

Hint: February of a leap year has 29 days. A leap year must be:

- Multiples of 4 or
- Multiples of both 100 and 400
- E.g.: 1996 is a leap year, 1990, 2002, and 2100 are not leap years

----------End----------