	MATAPELAJARAN: Formal Methods		MARKAH:
	TOPIK:	KOD: BCS2213	
	PENILAIAN: QUIZ 3	BIL: 1	
		MASA: 90 Minutes	

SESI 2015/2016 SEMESTER 1

NO METRIK : _____

NAME:

Instructions.

Write Z specifications to describe following **TWO** systems. This assignment will be evaluated in maximum 2.5% of your total marks.

- use CZT-IDE for the development;
- be sure you not have errors in your specifications (marked by red circles in CZT-IDE);
- don't forget to comment your specifications;
- submit into Kalam two files with extension .zed8, giving them the names Quiz_3_1_<your ID> and Quiz_3_2_<your ID>.

Task1. A teacher wants to keep a register of students in his class, and to record which of them have completed their homework. A simple template of the Register schema is


<i>Register</i>
<i>enrolled</i> : \mathbb{P} STUDENT <i>completed</i> : \mathbb{P} STUDENT
...

Write a Z specification to describe the following operations:

- an operation to *Enroll* a new student;
- an operation to *Record* that a student (already enrolled in the class) has finished the homework;
- an operation to *Enquire* whether a student (who must be enrolled) has finished the homework (return an answer from the set {yes, no}).

Questions for self-control:

1. What types (given set and freetype) you need define?
2. Do operations change the state of the Register schema?
3. What logical guards you need specify for the operations? (don't forget to add a guard for the Register schema as well).

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Task2. Write a Z specification to describe a simple Vocabulary System

The system should be able to:

1. Record pairs of words, where one word is a *native* language and the other is a *foreign* language.
2. Each word of a pair may serve as translation of the other.

Operations, to be provided for the system:

- a pair of words may be added to the vocabulary;
- a pair of words may be deleted from the vocabulary;
- all translations of a native word into the foreign language may be requested;
- all translation of a foreign word into the native language may be requested.