

VDM Tools Introduction

Aims

- Syntax checking, type checking and editing a model
- Learn statements and expressions
 - e.g.: ‘If-Then-Else’, ‘Let – in’, Learn ‘for all’
- Write formal specification according to given requirements

A. Exercise (Statements and Expressions)

A.1. Write a formal specification for the following requirements:

1. Function to calculate factorial (Tips: if-else recursive algorithm).
2. The Sum value (total value) in set of number. (Tips: let statement).
3. Find the smallest number in the set of number. (Tips: “for all” and “if-else”).

A.2. By using the formal specification you had done, please output the following result from the query in the interpreter.

```
Initializing specification ...
done
>> create a := new Test()
>> print a.factorial(6)
720
>> print a.getSmallest({100,88,3,5})
3
>> print a.sumSet({100,88,3,5})
196
```

B. Exercise: Case Study

Background of the case study

The Belief, Taboos and Consequences practiced by all of the communities and ethnic. However, for the indigenous communities in the Borneo Island, although they are practicing the taboos, and believing the consequences, but, these Taboos, belief and consequences are actually do not have any proper documents recording it. Each and every Belief, Taboos and Consequences are being passed down by their ancestors verbally, and the truth and logical value of the knowledge pass-down are unknown.

For example:

-- Taboo: During dusk, the people are not allowed to eat sugar cane.

-- Consequence to the above taboo: The Ketupong will bite the ear of the people who eat sugar cane. Logically and scientifically, it is not possible that the above consequence will likely occur, but the community still practicing the taboos and belief. Perhaps, the real value of the above taboo is just to prevent the children to eat sugar cane when the sky started to get dark, to prevent ants or cockroaches to eat the left-over of the sugar cane.

Therefore, the community leader wanted to have a system to record and document the taboos and belief together with the consequences, such that the knowledge could be preserved and referred by the young generations. Thus, it will not be just a knowledge pass-down verbally, but a system recording it, like archive/library/repository.

B.1. Write a formal specification for the following requirements:

Basic Functions of the system:

1. Add/Edit/Delete for beliefs and consequences fields
2. Searching feature for the beliefs and consequences

Paper prototypes:

Add/edit Taboos and beliefs screen:

Taboo :	<input type="text"/>
Consequences:	<input type="text"/>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

Searching Taboos and beliefs screen:

Search:

Search

Results:

Taboo 1: _____

Consequence 1: _____

Consequence 2: _____

End of Lab 4