

13 Composite types – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)
composite type	复合类型	_____
record	记录	_____
set	集合	_____

Recall

Real things are usually made of several values of different types. A **composite type** 复合类型 groups them under one name.

New ideas

Read these first. Each idea has a short worked example. Then do the Practice.

■ 1 Record

record Student

Name : STRING
Age : INTEGER
Grade : CHAR
Enrolled : BOOLEAN

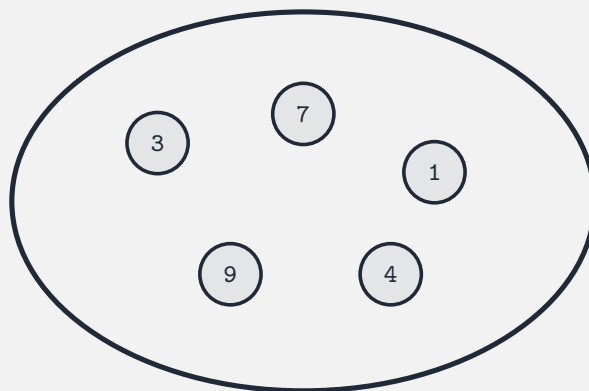
one name, several fields of different types

A **record** 记录 groups several **fields** of different types under one name —like a **Student** with a name, age, grade and enrolled flag.

Worked example.

```
TYPE Student
  DECLARE Name : STRING
  DECLARE Age : INTEGER
  DECLARE Grade : CHAR
ENDTYPE
DECLARE s : Student
s.Name ← "Lily"
s.Age ← 16
```

■ 2 Set



unordered, every value unique

A **set** 集合 is an unordered collection of unique values. You can add, remove, test membership, and take the union or intersection of two sets.

Worked example. The union of {2, 4, 6} and {4, 6, 8} is {2, 4, 6, 8} —the shared 4 and 6 appear only once. Adding 4 to a set that already has it leaves the set unchanged.

Watch out: a record groups fields of *different* types under one name (unlike an array, where every item is the *same* type). A set ignores both order and duplicates.

Practice

Try these in order.

13.1 What does a *composite type* do? [1]

13.2 What is a *record*? [1]

13.3 Can the fields of a record be different types? [1]

13.4 What is a *set*? [1]

13.5 Can a set contain the same value twice? [1]

13.6 A record and an array both store several values. Explain one key difference between them. [2]

13.7 Challenge. Two sets are $A = \{1, 2, 3, 4\}$ and $B = \{3, 4, 5\}$. Write down their union and their intersection. [2]
