

# COMP6047 - Algorithm and Programming

## Session 4 – Program Control: Repetition

### Case 3 – Pangram

#### Problem Statement

A pangram is a phrase that includes at least one occurrence of each of the 26 letters, ‘a’...‘z’. You’re probably familiar with this one: “The quick brown fox jumps over the lazy dog.”

Your job is to recognize pangrams. For phrases that don’t contain every letter, report what letters are missing. We’ll say that a particular letter occurs in the phrase if it occurs as either upper case or lower case.

#### Format Input

Input starts with a line containing an integer  $1 \leq N \leq 50$ . The next N lines are each a single phrase, possibly containing upper and lower case letters, spaces, decimal digits and punctuation characters ‘.’, ‘,’, ‘?’, ‘!’, ‘”’ and ‘”’. Each phrase contains at least one and no more than 100 characters.

#### Format Output

For each input phrase, output “pangram” if it qualifies as a pangram. Otherwise, output the word “missing” followed by a space and then the list of letters that didn’t occur in the phrase. The list of missing letters should be reported in lower case and should be sorted alphabetically.

#### Test Case

Sample Input	Sample Output
3 The quick brown fox jumps over the lazy dog. ZYXW, vu TSR Ponm lkj ihgfd CBA. .,?!" 92384 abcde FGHIJ	pangram  missing eq  missing klmnopqrstuvwxyz

