The University of Melbourne

Department of Computing and Information Systems

COMP90049

Knowledge Technologies

Sample

Mid-semester Test

Length: This paper has 3 pages including this cover page.

Authorised materials: None

Calculators: Not permitted

Time: 50 minutes, with no reading time

Instructions to students: This exam is worth a total of 10 marks and counts for 10% of your final grade. Please answer all questions in the provided spaces on the test page. Please write your student ID in the space provided below. The test may not be removed from the test venue.

Student id:

Examiner's use only:

Q1	Q2	Q3	Q4	Q5

COMP90049 Knowledge Technologies
Mid-semester Test
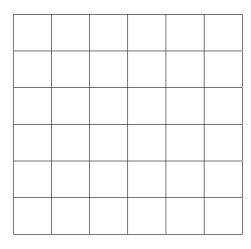
Semester 1, 2013

Total marks: 10

Students must attempt all questions

1. Describe, with the aid of an example, the difference between "concrete tasks" and "knowledge tasks." (1 mark)

2. For the "regular expression":

   `\S(he)a[t]{1,2}i?`

   which of the following strings would the expression match (circle each)? (1 mark)

   (a) `eai`
   (b) `heatt`
   (c) `cheaters`
   (d) `space heating`

3. Consider searching for the substring `gone` within the target string `wegoandthenwearegoners` — indicate the behaviour of the Boyer-Moore algorithm (as discussed in this subject), including any necessary data structures. (3 marks)

4. Use the "global edit distance," as shown in the lectures, to find the distance **from** the string `lede` **to** the string `deed`, based on the following parameter vector:

   $$[m, i, d, r] = [-3, 1, 4, 2]$$

   Use as much of the matrix below as you need. There are four paths through the matrix corresponding to the optimal distance; write the operations for at least two of them to the right of the table. (3 marks)

5. For the "Soundex algorithm":

   (a) Apply it to the strings `carter` and `clinton`, using the following modified table: (1 mark)

`aeiouwy`	0
`bdgjlmnrvz`	1
`cfhkpqstx`	2

   (b) Briefly describe how you might use your results in part (a) to perform "approximate matching" for the string `collins`. (1 mark)

— End of Test —