The University of Melbourne

Department of Computing and Information Systems

COMP90049
Knowledge Technologies
Sample
Mid-semester Test

Length: This paper has 4 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*	*Q6*

Continued overleaf . . .

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Sample

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`

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3. Use the "global edit distance," as shown in the lectures, to find the distance **from** (deleting) the string `led` **to** (inserting) 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. (2 marks)

4. 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)

Continued overleaf . . .

5. In the context of Information Retrieval, what does it mean for a document to be "relevant"? (1 mark)

6. Given the following document collection:

   ```
   A: morning afternoon evening good
   B: good good good good vibrations
   ```

   Use the cosine similarity to determine the "document ranking" for the query `Q: good morning`, based on the following TF-IDF model: (3 marks)

$$w_{d,t} = f_{d,t} \qquad w_{q,t} = \frac{N}{f_t}$$

— End of Test —