1.

a. Performance measure:

Correct/accurate translation of a Klingon phrase to English.

b.

i. Acts humanly?

True

This is a logical comparative analysis and the agent would perform the task

the same way a human would.

ii. Thinks humanly?

True

Given the inputs, the output the computer provides will be either the same or

very similar to the output a human would provide. The methodology to determine

what words correspond between the languages would be the same between the

two.

iii. Acts Rationally?

True

The agent will act to achieve the best expected outcome of a correct translation

iv. Thinks rationally?

True

The agent will use irrefutable reasoning to arrive at a conclusion.

c.

i. Sensors (Percepts)

text input

ii. Actuators (Actions)

translated text output

d.

i. Fully observable

ii. Single agent

iii. Deterministic

iv. Sequential

v. Static

vi. Discrete

vii. known

e.

i. Critic

Since we are given a list that pairs Klingon dishes with English translations, the

critic would be the function that assesses the translations, that is, if we determine

that the Klingon word “pub” is the English word “boiled”, then the critic would

look for all sentences in Klingon that contain the word “pub” and confirm that

they also contain the word “boiled” in the English translation. If a Klingon sentence contains “pub” but the given English translation does not contain the

word “boiled”, then the feedback would be lower and the learning element

will need to modify the performance element to possibly accept word variants.

ii. Learning element

The learning element takes the performance evaluations from the critic and

modifies the performance element to either accept reduced matches for example if

4 of 5 letters of one Klingon word appear in another Klingon word, select it as a

partial match.

iii. Performance element

Perceives the environment and takes actions such as reading a word and selecting

it as a word that appears in a Klingon sentence where the English translation

contains a target word.

2.

a.

|  |  |  |
| --- | --- | --- |
| 1 | 2 | 3 |
| 4 |  | 6 |
| 7 | 5 | 8 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| left   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | |  | 4 | 6 | | 7 | 5 | 8 | | right   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 6 |  | | 7 | 5 | 8 | | up   |  |  |  | | --- | --- | --- | | 1 |  | 3 | | 4 | 2 | 6 | | 7 | 5 | 8 | | down   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 5 | 6 | | 7 |  | 8 | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| right   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 |  | 6 | | 7 | 5 | 8 | | up   |  |  |  | | --- | --- | --- | |  | 2 | 3 | | 1 | 4 | 6 | | 7 | 5 | 8 | | down   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 7 | 4 | 6 | |  | 5 | 8 | | left   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 |  | 6 | | 7 | 5 | 8 | | up   |  |  |  | | --- | --- | --- | | 1 | 2 |  | | 4 | 6 | 3 | | 7 | 5 | 8 | | down   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 6 | 8 | | 7 | 5 |  | | left   |  |  |  | | --- | --- | --- | |  | 1 | 3 | | 4 | 2 | 6 | | 7 | 5 | 8 | | right   |  |  |  | | --- | --- | --- | | 1 | 3 |  | | 4 | 2 | 6 | | 7 | 5 | 8 | | down   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 |  | 6 | | 7 | 5 | 8 | | left   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 5 | 6 | |  | 7 | 8 | | right   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 5 | 6 | | 7 | 8 |  | | up   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 |  | 6 | | 7 | 5 | 8 | |

b.

|  |  |  |
| --- | --- | --- |
| 1 | 2 | 3 |
| 4 |  | 6 |
| 7 | 5 | 8 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| down   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 5 | 6 | | 7 |  | 8 | | right   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 6 |  | | 7 | 5 | 8 | | up   |  |  |  | | --- | --- | --- | | 1 |  | 3 | | 4 | 2 | 6 | | 7 | 5 | 8 | | left   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | |  | 4 | 6 | | 7 | 5 | 8 | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| right   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 5 | 6 | | 7 | 8 |  | | up   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 |  | 6 | | 7 | 5 | 8 | | left   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 5 | 6 | |  | 7 | 8 | | down   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 | 6 | 8 | | 7 | 5 |  | | up   |  |  |  | | --- | --- | --- | | 1 | 2 |  | | 4 | 6 | 3 | | 7 | 5 | 8 | | left   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 |  | 6 | | 7 | 5 | 8 | | down   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 |  | 6 | | 7 | 5 | 8 | | right   |  |  |  | | --- | --- | --- | | 1 | 3 |  | | 4 | 2 | 6 | | 7 | 5 | 8 | | left   |  |  |  | | --- | --- | --- | |  | 1 | 3 | | 4 | 2 | 6 | | 7 | 5 | 8 | | down   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 7 | 4 | 6 | |  | 5 | 8 | | right   |  |  |  | | --- | --- | --- | | 1 | 2 | 3 | | 4 |  | 6 | | 7 | 5 | 8 | | up   |  |  |  | | --- | --- | --- | |  | 2 | 3 | | 1 | 4 | 6 | | 7 | 5 | 8 | |