

Attempto Controlled English Language, Tools and Applications

Exercises 4

1 Translation from ACE to ACE (paraphrasing)

Note that the paraphrase must not necessarily parse into an equivalent DRS. What matters is that the meaning remains exactly the same.

1.1 Paraphrase using variables instead of nouns (if possible)

- A customer enters a card A and enters a card B. If it is correct then the customer gets the card back.

A customer X enters a card A and enters a card B.
If B is correct then X gets B back.

1.2 Find at least two 1-sentence paraphrases for "John knows everybody."

Everybody is known by John.
If there is somebody then John knows him.

1.3 Paraphrase without using relative clauses

- Every man who loves a woman who loves the man is happy.
- John who Mary who owns a dog loves waits.
- A man owns a dog that hates every cat and likes a ball.
- A man owns a dog that hates every cat and that likes a ball.

1.4 Paraphrase without using an *if-then* sentence

- If a man X loves a woman Y then X likes Y.
- If there is a man then he likes himself.
- If a man owns a dog and the dog hates a cat then the man hates the cat.
- If a man owns a dog and the dog hates a cat then the cat hates the man.

1.5 Paraphrase without using *every/no*

- No dog likes every cat.

1.6 Discuss

- Why is paraphrasing useful?
- Give an example of an *if-then* sentence which is easier to read than an *every*-sentence.
- Give an example of an *every* sentence which is easier to read than an *if-then*-sentence.
- What linguistic features contribute to the poor readability.

Which of those statements hold? Any ACE text can be paraphrased so that:

- the word 'and' does not occur,
- the word 'or' does not occur,
- the Saxon Genitive does not occur,
- relative clauses do not occur,
- the *if-then* construction does not occur.

2 Translation from natural language to ACE

Note that

- there can be different solutions as the input is ambiguous (but an ACE text can express only a single meaning),
- there might be different solutions depending on how much content we want to make explicit (try to make explicit as much as possible),
- it might happen that the all of the content of the input cannot be expressed in ACE, in this case try as best as you can and discuss the deficiencies of ACE.

2.1 Translate from English to ACE. Constraints on study groups

Express in ACE the following 3 constraints on a study group. (Note that those are constraints that apply to all groups.)

- Groups should have either 2 or 3 members.
- Groups should have at least one member of each gender.
- Group members are all from different institutions.

Original exercise and a solution in OWL+SWRL can be found in the paper

Pushing the limits of OWL, Rules and Protege. A simple example.
Anne Cregan, Malgorzata Mochol, Denny Vrandecic and Sean Bechhofer.
OWLED2005, 2005.

See: <http://www.mindswap.org/2005/OWLWorkshop/accepted.shtml>

The ACE solution is the following.

Every group contains at least 2 persons and contains at most 3 persons.

Every group contains at least 1 males and contains at least 1 females.
Every male is a person and every female is a person.
Every person is a male or is a female.

The ACE solution to the third constraint (*if-then* version)

If there is a group G then it is false that
G contains a person P1 that comes-from an institution I and that
G contains a person P2 that comes-from the institution I and that
P1 is not P2.

The ACE solution to the third constraint (*every* version)

No group
contains a person P1 and
contains a person P2
that comes-from an institution
that P1 that is not P2 comes-from.

Try to paraphrase the 3rd constraint and note that the Core ACE paraphrase gets very long. (And that the NP ACE paraphrase is a little strange, but that's a bug.)

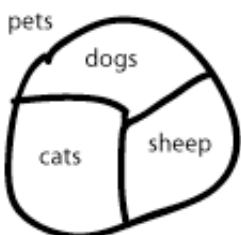
2.2 Translate from English to ACE. Unix password policy

A password must be 8 characters or longer and it should contain both letters and digits. It shouldn't be "god" 'cause this is easy to exploit. Every user must have a password, otherwise they can't enter the system. If the password matches the login-name then it's also easy guess, and passwords shouldn't be easy to guess.

Every password contains at least 8 characters.
Every password contains some digits and contains some letters.
Every letter is a character and every digit is a character.
Every login-name contains at most 8 characters.
No password is "god".
Every user has a login-name and has a password.
If a user has a login-name X and has a password Y then X is not Y.

3 Translation from a formal language to ACE

3.1 Translate from a diagram to ACE



No dog is a cat.
No cat is a sheep.
No dog is a sheep.
Every pet is a dog or is a cat or is a sheep.
Everything that is a dog or that is a cat or that is a sheep is a pet.

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