Assignment No. 8

Due: 13:15 on Tuesday 12 March 2015 via email

There is no word limit/requirement for these exercises. Your responses may be in English, French, Spanish, German, Arabic, or any other language you are comfortable writing in. The grammar, spelling, and prescriptive conventions are not evaluated for the assignment. You do not need to edit, revise a number of times, or attend in any special way to form or language. You should just write in a way that is clear to you. You are welcome to use bullet points. You do not need to write complete sentences or in paragraph form complete with transitions.

Homework should be submitted by 15:15 on the day it is due. There is no late homework accepted. All written assignments must be typed using 12 pt Times New Roman or 11 pt Arial font with 1" margins. All assignments must be send in one of the following formats: .doc, .docx, .txt, .tex, .pdf, .rtf, .odt, .dot. Remember to cite all sources and use APA guidelines. Homework must also include your name, class, date, and assignment.

1 Sets

For assignment no. 7 you defined a set $U_{<w,t>}$ with individual objects in it, then used the members of $U_{<w,t>}$ to illustrate the concepts below. The sets denoted by the pairs (or triplets) of related words that you listed were defined using **extension** notation (e.g. the sets were defined by simply listing the elements of the set). For this exercise, using the same words to illustrate the concepts below, define the sets using **set-builder** notation.

1. mutually exclusive antonyms

2. not mutually exclusive antonyms

3. perfect synonyms

4. close enough synonyms

5. hypernyms

6. hyponyms

2 Set Notation

2.1 Extension notation

Given the set-builder notation for the following sets, define the sets using extension notation, and translate the set-builder notation into English prose (e.g. $A = \{x : x$ is a capital of the Republic of South Africa in 2015$\}$ $\rightarrow A =$ {Pretoria, Bloemfontein, Cape Town}, "A is the set of all elements x, such that x is a capital of the Republic of South Africa in 2015").

1. $A = \{x : x$ is a territory of Canada in 2015$\}$

2. $B = \{x : x$ is a spouse of Elizabeth Taylor$\}$

3. $C = \{x : x$ is borough of the City of New York in 2015$\}$

2.2 Set-builder Notation

Given the extension notation for the following sets, define the sets using set-builder notation, and translate the set-builder notation into English prose (e.g. $A =$ {Netherlands, Aruba, Curaçao, Sint Maarten} $\rightarrow A = \{x : x$ is a constituent country of the Kingdom of the Netherlands in 2015$\}$, "A is the set of all elements x, such that x is a constituent country of the Kingdom of the Netherlands in 2015").

1. $A = \{a, b, c\}$

2. $B = \{1, 2, 3, 4, \dots\}$

3. $C =$ {Obama, Bush Jr., Clinton, Bush Sr., Reagan}

2.3 Translating

Translate the following true statements about sets into English prose from set-theoretic notation (e.g. $A \cap A^- = \emptyset$, for any set $A \to$ "The intersection of set A and the complement of set A is the empty set).

1. $\emptyset \subseteq A$, for any set A

2. $A \subseteq A$, for any set A

3. $A \subseteq B$ iff $A \in \mathscr{P}(B)$, for any two sets A, B

4. If $A \subseteq B$ and $A \subseteq C$, then $A \subseteq C$, for any three sets A, B, C

3 Truth Conditions

For the sentences below, list all the truth conditions for that statement

1. "Italian court upholds Berlusconi acquittal in prostitution case"

2. "Mexico calls on U.S. to probe police killings of its nationals"