

## Assignment No. 7

### Due: 13:15 on Tuesday 10 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 each of the following, define a  $\langle w, t \rangle$  and the set of individual objects that are in it, then come up with two (2) examples each using sets:

1. mutually exclusive antonyms
2. not mutually exclusive antonyms
3. perfect synonyms
4. close enough synonyms
5. hypernyms
6. hyponyms

## 2 Readings

Read ch. 2 "Truth Conditions," of Gregory (2000). *Semantics*. Complete the following exercises taken from the book. You are to do this individually, and not with your group. The book uses some slightly different notation than we will use. We will use the following symbols instead:  $\& = \wedge; \sim P = \neg P; t = 1; f = 0$

### 2.1 Exercise 2.1

What is the truth value of the following statements, according to the information in your nearest window? Assume the truth values are *true* and *false*.

1. 'it is snowing.'
2. 'there are at least two airplanes.'
3. 'there is not a cloud in the sky.'

Why might the following be difficult to assign a truth value?

1. 'it is quite quiet.'
2. 'it is a beautiful view.'
3. 'there will be a storm tomorrow.'

| $P$ | $Q$ |
|-----|-----|
| 1   | 1   |
| 1   | 0   |
| 0   | 1   |
| 0   | 0   |

## 2.2 Exercise 2.4

If we refer to the statement 'it is raining' as  $P$  and the statement 'it is cold' as  $Q$ , describe the state of the world for each row of the truth table below.

## 2.3 Exercise 2.8

Draw a truth table for the statement 'Michael Owen is injured or he is suspended'. Give the equivalent definition in English.

## 2.4 Exercise 2.9

Draw truth tables for the following sentences (assume that alternatives connected by 'or' are not mutually exclusive):

1. 'either the boat capsized or John fell in'
2. 'either the Angels won and the Dodgers tied or the Giants lost'
3. Pooh will have honey and either he will have maple syrup or he will have clotted cream'

## 2.5 Exercise 2.16

Draw a truth table for the following statement pairs and verify that they are equivalent:

1. First Pair
  - (a) 'it is not the case that both  $P$  and  $Q$  are true'
  - (b) 'either  $P$  or  $Q$  is false'
2. Second Pair
  - (a) 'it is not the case that either  $P$  or  $Q$  is true'
  - (b) 'both  $P$  and  $Q$  are false'

## 2.6 Exercise 2.20

Draw a truth table for the statement: 'either she passed the exam or she did not pass the exam'

## 2.7 Exercise 2.11

The statement 'John paid Mary and Mary paid Bill or John paid Bill' has at least two meanings. What two of the meanings? How could they be distinguished in English by inserting a strategically placed 'either'?

## 2.8 Exercise 2.13

Draw the truth tables for the following expressions and verify their truth conditions are different.

1.  $(P \wedge Q) \vee R$
2.  $P \wedge (Q \vee R)$

## 2.9 Exercise 2.21

Draw the truth tables for the following pairs of sentences. The following pairs of sentences should all have the same truth conditions.

1. First Pair

- (a) John proposed to Mary and either she hit him or he banged his head.
- (b) Either John proposed to Mary and she hit him or else John proposed to Mary and he banged his head.

2. Second Pair

- (a) Either Colonel Mustard did it or it was done in the billiards room and it was done with the candlestick.
- (b) Either Colonel Mustard did it or it was done in the billiards room and (also) either Colonel Mustard did it or it was done with the candlestick.

## 2.10 Exercise 2.23

Draw a truth table for the statements:

- 1. 'John is home and Mary is happy'
- 2. 'John is home or Mary is happy'

## 2.11 Exercise 2.24

Make a truth table for the statement: 'either  $P$  or  $Q$  but not both' (treat 'but' as  $\wedge$ ). This is often known as 'exclusive *or*' as opposed to 'inclusive *or*'