

COMP 10070

Formal Foundations

Tutorial Sheet 1

Dé Céadaoin, 6 Deireadh Fómhair 2021

1. Express the following argument as a *syllogism*:

All Greek gods were jealous. Zeus was a Greek god. Therefore, Zeus was jealous.

Is the conclusion valid? Does changing the order of the first two sentences change the conclusion?

2. Express the following argument as a syllogism:

Roy Keane is from Cork. Everyone from Cork is Irish. Therefore, Roy Keane is Irish.

Is the conclusion valid?

3. Express the following argument as a syllogism:

Roy Keane is from Cork. Roy Keane was an international soccer player. Therefore, everyone from Cork is an international soccer player.

Is the conclusion valid?

4. Give a definition of a proposition and, for each of the following, state whether it is a proposition and, if so, whether it is true or false.

- (a) Berlin is in Germany.
- (b) When does this Tutorial finish?
- (c) $2 + 4 \times 5 = 30$.
- (d) The UCD Computer Science building is located at the Wexford campus.
- (e) Come on UCD!
- (f) Finn Harps beat Dundalk last Friday.
- (g) Barcelona beat Benfica in the UEFA Champions' League last Wednesday.
- (h) Sydney is the capital of Australia.

5. Extract the linguistic form of argument of the following piece of text by substituting its subject matter with symbols for simple sentences:

Mechanical work is done whenever a force moves an object, the force being the push or pull needed to move it. Work is done only if the object is moved: for example, when a man is asked to lift a heavy object onto a shelf and he succeeds in doing so. If it is too heavy for him to lift, he cannot be said to have done any useful work at all, no matter how much he strains.

Paraphrase the domain specific sentences, eg

W: Mechanical work is done.

Retain the domain-independent English words, such as *whenever*, *only if*, *for example*, etc.

(Problems taken from or based on those in Nissanke's book.)

**Please upload your work to
Brightspace before midnight tonight.**