



Assignment 1

Weight: 15% of your final grade

Due: after Unit 2

Important!

 Please note that, for the sake of fairness to all students, your tutor is not supposed to provide help with your program coding (e.g., pick up compiler errors, send a working code for part of the program, correct your wrong code and convert it to a working one). S/he may, however, give advice about your steps and/or your techniques. If you need help with your coding in order to complete your assignment or to keep you going with it, then you may lose marks on your assignment.

 For this homework, you are not allowed to use the built-in predicates from your compiler/interpreter. Please create your own version of built-in predicates using a different name such as `mypredicate()` or `myfunction()`.

Question 1 (20 marks)

Discuss the limitations of expert systems in modeling human performance.

Question 2 (20 marks)

Determine if there is equivalence or not between $(\neg P \rightarrow \neg Q)$ and $(P \vee \neg Q)$. Use truth tables to explain your answer.

Question 3 (20 marks)

Consider the following pair of expressions:

`lives_in(X, athabasca_town, works_in(X, athabasca_university))`

`lives_in(karen, Y, works_in(X, Z))`

Try to unify this pair of expressions; then either show the most general unifier or explain why they will not unify.

Question 4 (20 marks)

Write a program that computes the factorial of a given integer N.

For example: `fact(0)=1`, `fact(1)=1`, `Fact(2)= 1*2=2`, `fact(3) = 1*2*3=6` etc.

Question 5 (20 marks)

Write a program that reads an integer x and a list of integers L ; then locate the list of all positions of x into L , and return the resulting list.

For example, for $x=2$ and $L=[1,2,3,4,2,5,2,6]$ the program should return the list $R=[2,5,7]$.