ASSIGNMENT 5 - REPORT

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MT20075

In this assignment, I have utilised a different functionality of Prolog, that is, Prolog query. The prolog code stores the advisory based statements for each of the facts generated by the python file.
In the python code, 3 questions are asked. The questions are:

1. Which field of Computer Science are you interested in?
2. How are your grades in Mtech? (Average means 6-8 (excluding 8) and High means 8-10)
3. What is your preference between projects or only courses?

Python code:

```
import nltk
from nltk.tokenize import word_tokenize
from nltk.stem import PorterStemmer
from pyswip import Prolog

#----------------------------QUESTION - 1-----------------------------

inplist = []
inp1 = input("Which field of Computer Science are you interested in? \n")
# inp1 = input("How are your grades in Mtech? (Average means 6-8 (excluding 8)
and High means 8-10) \n")
# inp1 = input("What is your preference between projects or only courses? \n")
# print("\nWe have got ...", inp1)
tok1 = word_tokenize(inp1)
#print("\n\n...The tokens are ...", tok1)

ps = PorterStemmer()
for wod in tok1:
    #print("\n..word is..",wod)
    stem1 = ps.stem(wod)
    #print("...stem is ...", stem1)
    inplist.append(stem1)

#print("\n.. list is ", inplist)

f = open("elective_facts.txt", 'w')
if "field" in inplist:
    if "data" in inplist:
```

```
        f.write("field(data)\n")
    elif "softwar" in inplist:
        f.write("field(software)\n")
    elif "network" in inplist:
        f.write("field(networking)\n")

#----------------------------QUESTION - 2-----------------------------

inp2 = input("How are your grades in Mtech? (Average means 6-8 (excluding 8)
and High means 8-10) \n")
# inp1 = input("What is your preference between projects or only courses? \n")
# print("\nWe have got ...", inp1)
tok2 = word_tokenize(inp2)
#print("\n\n...The tokens are ...", tok2)

ps = PorterStemmer()
for wod in tok2:
    #print("\n..word is..",wod)
    stem2 = ps.stem(wod)
    #print("...stem is ...", stem2)
    inplist.append(stem2)

#print("\n.. list is ", inplist)

#f = open("elective_facts.txt", 'w')
if "grade" in inplist:
    if "averag" in inplist:
        f.write("grade(average)\n")
    elif "high" in inplist:
        f.write("grade(high)\n")

#----------------------------QUESTION - 3-----------------------------

inp3 = input("What is your preference between projects or only courses? \n")
# print("\nWe have got ...", inp1)
tok3 = word_tokenize(inp3)
#print("\n\n...The tokens are ...", tok3)

ps = PorterStemmer()
for wod in tok3:
    #print("\n..word is..",wod)
    stem3 = ps.stem(wod)
    #print("...stem is ...", stem3)
    inplist.append(stem3)

#print("\n.. list is ", inplist)

#f = open("elective_facts.txt", 'w')
if "prefer" in inplist:
```

```
    if "project" in inplist:
        f.write("preference(projects)\n")
    elif "cours" in inplist:
        f.write("preference(courses)\n")

f.close()

#---------------APPLYING PROLOG TO THIS PYTHON PROGRAM--------------

print('\n\n')
swipl = Prolog()
swipl.consult("elective_advisory.pl")
# print(list(swipl.query()))
with open('elective_facts.txt') as f:
    lines = f.readlines()
    for l in lines:
        #print(l)
        results = list(swipl.query(l))
        print(results)
```

Using the python code, the following type of facts can be generated:

- field
    - field(data)
    - field(software)
    - field(networking)
- grade
    - grade(average)
    - grade(high)
- preference
    - preference(projects)
    - preference(courses)

Therefore the prolog .pl file code for this assignment contains the clauses that need to be printed when the facts generated in the python code are put as queries into the prolog code after consulting the right prolog file. Thus after storing the fact queries for each of the questions answered by the user, these are traversed and the queries are put to call in a loop to generate the results for each of the questions sequentially.

Prolog code:

```
/*The messages to be displayed for the option chosen in case of field of
interest*/

field(data):-
    write('Take up Data Engineering Courses like:'),nl,
    write('Machine Learning - CSE543'),nl,
    write('Information Retrieval - CSE508'),nl,
    write('Big Data Analytics - CSE510A'),nl,
    write('Database System Implementation - CSE507'),nl,
    write('Machine Learning - CSE543'),nl,
    write('Data Mining - CSE506'),nl,nl.

field(software):-
    write('Take up Software Engineering Courses like:'),nl,
    write('Software defined networking - CSE565'),nl,
    write('Software Production Evolution and Maintenance - CSE582'),nl,
    write('Software Development using Open Source - CSE583'),nl,
    write('Foundations of Parallel Programming - CSE502'),nl,
    write('Program Verification - CSE584'),nl,nl.

field(networking):-
    write('Take up Networking Courses like:'),nl,
    write('Network Security - CSE550'),nl,
    write('Wireless Networks - CSE538'),nl,
    write('Communication Networks - CSE636'),nl,
    write('Cellular Data Networks - CSE539'),nl,
    write('Ad Hoc Wireless Networks - CSE5xx'),nl,
    write('Network Science - CSE655'),nl,nl.


/*The messages to be displayed in case of grade input given by the user*/

grade(average):-
     write('Take up 500 to some of max 600 level general courses based on your
field of interest'),nl,nl.

grade(high):-
     write('Take up advanced level courses of 600 to 700 level also based on
your field of interest'),nl,nl.


/*The messages to be displaed in case of the project or only courses preference
input given by the user*/

preference(projects):-
    write('You can do either:'),nl,
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```
     write('1. Full-fleged research - For this you need to complete atleast 32 credits of course work for a 16 credit thesis.'),nl,
    write('2. Capstone Project as:'),nl,
    write('--- A 4 credit capstone project with 44 credits of coursework'),nl,
         write('--- An 8 credit capstone project with 40 credits of coursework'),nl,nl.

preference(courses):-
          write('You have chosen the option of completing degree without Thesis/Capstone/Scholarly Paper'),nl,
         write('In this case you have to complete a total of 48 credits of coursework'),nl,nl.
```

Outputs:

Output number 1:

```
In [1]: runfile('C:/Users/dedri/OneDrive/Documents/Prolog/NL__Prolog__File.py', wdir='C:/Users/dedri/OneDrive/Documents/Prolog')

Which field of Computer Science are you interested in?
I am interested in the field of data analytics

How are your grades in Mtech? (Average means 6-8 (excluding 8) and High means 8-10)
My grades are high

What is your preference between projects or only courses?
I prefer projects



Take up Data Engineering Courses like:
Machine Learning - CSE543
Information Retrieval - CSE508
Big Data Analytics - CSE510A
Database System Implementation - CSE507
Data Mining - CSE506

Take up advanced level courses of 600 to 700 level also based on your field of interest

You can do either:
1. Full-fleged research - For this you need to complete atleast 32 credits of course work for a 16 credit thesis.
2. Capstone Project as:
--- A 4 credit capstone project with 44 credits of coursework
--- An 8 credit capstone project with 40 credits of coursework
```

Output number 2:

```
In [2]: runfile('C:/Users/dedri/OneDrive/Documents/Prolog/NL__Prolog__File.py', wdir='C:/Users/dedri/OneDrive/Documents/Prolog')

Which field of Computer Science are you interested in?
I am interested in software field

How are your grades in Mtech? (Average means 6-8 (excluding 8) and High means 8-10)
My grade is average

What is your preference between projects or only courses?
I prefer only course



Take up Software Engineering Courses like:
Software defined networking - CSE565
Software Production Evolution and Maintenance - CSE582
Software Development using Open Source - CSE583
Foundations of Parallel Programming - CSE502
Program Verification - CSE584

Take up 500 to some of max 600 level general courses based on your field of interest

You have chosen the option of completing degree without Thesis/Capstone/Scholarly Paper
In this case you have to complete a total of 48 credits of coursework
```