===

Assignment - 4

===

ABOUT

This is a Natural language interface program for the career advisory system for B.tech computer science and engineering branch students.

FEATURES USED

1.Preprocessing used:

Here two functions in python for preprocessing :

A.take_inputs():

Where we take input answers on the basis of question asked.

i.punctuations remove

ii.word tokenizations.

iii.upper to lower case conversion .

iv.porter Stemmer.

B.take_digit():

In this function we are using isdigit() where we take only numbers from the sentence.

```python
def take_inputs(que):
    inplist2 = []
    inp2 = input(que)
    inp2 = re.sub(r'[^\w\s]', '', inp2)
    tok2 = word_tokenize(inp2)
    tok2=[token.lower() for token in tok2]
    ps = PorterStemmer()
    for wod in tok2:
        stem1 = ps.stem(wod)
        inplist2.append(stem1)
    return inplist2
```

```python
def take_digit(str):
    inp2 = input(str)
    return [int(s) for s in inp2.split() if s.isdigit()]
```

2.QUESTION ASK WHILE INTERACT WITH USER -
There are a large number of question were asked to decide the career of student, and each question will diverted on the different profession as per replied by the student.

```python
if "not_heigher_studi" in inp:
    f.write("heigher_studies(no).\n")
    f.write("give_which_eaxm(not_intrested).\n")
    inp=take_inputs("Are you intreseted in buisness?? 1)yes 2)no ")
    if "no" in inp:
        f.write("buisness(no).\n")
        inp=take_inputs("Are you intrested in coding ?' 1)yes 2)no ")
        if "ye" in inp:
            f.write("code(yes).\n")
            inp=take_inputs("did you have problem solving approach?? 1)yes 2)no ")
            if "ye" in inp:
              f.write("problem_solving(yes).\n")
            else:
              f.write("problem_solving(no).\n")
            inp=take_inputs("Are you good in aptitude?? 1)yes 2)no ")
            if "ye" in inp:
                f.write("aptitude(yes).\n")
            else:
                f.write("aptitude(no).\n")
            inp=take_inputs("'Are you a logical thinker?' 1)yes 2)no ")
            if "ye" in inp:
              f.write("logical_thinking(yes).\n")
            else:
              f.write("logical_thinking(no).\n")
```

```
else:
    f.write("buisness(yes).\n")
    f.write("give_which_eaxm(not_intrested).\n")
    inp=take_inputs("Whats your financial condition ?' 1)weak 2)strong 3)medium ")
    if "weak" in inp:
        f.write("financial(weak).\n")
    elif "medium" in inp:
        f.write("financial(medium).\n")
    else:
        f.write("financial(strong).\n")
    inp=take_inputs("Did you like to inteact with peoples ?(y/n) ")
    if "ye" in inp:
        f.write("intreact(yes).\n")
    else:
        f.write("intreact(no).\n")
    inp=take_inputs("Can you able to think of an innovation or having thought of new ideas  ?(can/can't)")
    if ("can" in inp) and ("ye" in inp):
        f.write("idea(can).\n")
    else:
        f.write("idea(can_not).\n")
    inp=take_inputs("did you have leadership quality?(y/n) ")
    if "ye" in inp:
        f.write("leadership(yes).\n")
    else:
        f.write("leadership(no).\n")
    inp=take_inputs("Are you mentally strong to take risk ?(can/can't) ")
    if ("can" in inp) and ("ye" in inp):
        f.write("risk(can).\n")
    else:
        f.write("risk(can_not).\n")
```

3.MAKING FACTS ON THE BASIS OF ABOVE QUESTION ANSWERS-

Like the program below programme fires the question "what is your btech percentage in numbers?", the user have to reply by giving its percentage and the take_digit() function take out number from sentence check for percentage if it is greater than 80% then it will make a fact marks(yes), else if the user writes a percentage less than 80% then facts generated will be marks(no), and these facts were given input to the prolog code to be advised as per facts generated here.

```
inp=take_digit("What is your B.tech percentage in numbers? ")
if inp[0]>=80:
 f.write("marks(yes).\n")
else:
 f.write("marks(no).\n")
```

-in below questions the users have to reply such that there should be yes or no present in the reply so that it will be preprocessed and the check condition then generates fact either code(yes) or code (no) on the basis of reply.

```
inp=take_inputs("Are you intrested in coding ?(y/n)")
if "ye" in inp:
    f.write("code(yes).\n")
else:
    f.write("code(no).\n")
```

-In below code there is checking of 2 words and on the basis of that it will decide which fact to generate.

```
inp=take_inputs("Can you able to think of an innovation or having thought of new ideas  ?(can/can't)")
if ("can" in inp) and ("ye" in inp):
    f.write("idea(can).\n")
else:
    f.write("idea(can_not).\n")
```

Likewise above all the facts were generated.

4.CAREER GENERATED:
As per assignment 1 where i had decided following career roles on the basis of their skills, grade on the B.tech, interest etc.
1.Heigher studies:
   1.1.M.tech
   1.2.MS
   1.3.MBA
2.Non-Heigher Studies:
   2.1.Buisness
     2.1.1. Entrepreneurship
   2.2.Non-Buisness
     2.2.1. Government job
     2.2.2. IT industry job
     2.2.3. Defense
3.Make hobby as a career
4.Other (need to think more for career).

5.SMALL output.txt READ PROGRAM CHANGE IN PROLOG

```
readFromFile:-
  setup_call_cleanup(
    open('C:/Users/akanksha/Desktop/output.txt',read,In),
    (
      repeat,
      read_term(In, X, []),
      readfactsFromfile(X),asserta(X), !
    ),
    close(In)
  ).
```

OUTPUT

1.Heigher studies:
1.1.M.tech
Question asked:

```
would you like to do job or heigher_studies? 1)not_heigher_studies 2)heigher_studies yes, I want to go for heigher_studies
did you have problem solving approach?(yes/no)yes i have problem solving approach
What is your B.tech percentage in numbers? I scored 88 percentage
[88]
Are you good in aptitude?(yes/no)yes i am good in aptitude.
Are you a logical thinker?(yes/no)yes I am logical thinker.
Are you intrested in research?(yes/no)yes I am intrested in research.
Whats your financial condition ?(weak/strong/medium)My financial condition is strong.
Are you intrested in coding ?(y/n)yes i love coding.
Are you project oriented ?(y/n)yes i like to make project.
Which exam do you like to give ?(CAT/GATE/GRE)I think GATE would be prefferable to me because I want to go IIT/IIIT/NIT
would you like to make your hobby as a carrier?(y/n)yes I am passionate about my dancing hobby so I can.
```

Generated facts:

output.txt ✕

```
 1 heigher_studies(yes).
 2 problem_solving(yes).
 3 marks(yes).
 4 aptitude(yes).
 5 logical_thinking(yes).
 6 research(yes).
 7 financial(strong).
 8 code(yes).
 9 project_oriented(yes).
10 give_which_eaxm(gate).
11 hobbies(yes).
12
```

Advised career:

```
?- consult('C:/Users/akanksha/Desktop/ASS4.pl').
Warning: c:/users/akanksha/desktop/ass4.pl:3:
Warning:    Singleton variables: [Career]
Warning: c:/users/akanksha/desktop/ass4.pl:79:
Warning:    Singleton variables: [IT]
true.

?- initial.
what should I do next after B.tech CSE?
Recommendation for Master of technology(M.tech)
 As you have a technical taste so M.tech is perfect for you
 you just have yto crack the gate exam with good percentile
 also non-gate admission available in IIIT-D.
 you can choose following bracnches in M.tech
 Artificial intelligence
 data engineering
 information security
 Mobile Computing
 without specilization as according to you furthur


ALL THE BEST
true.
```

   1.2.MS
Question asked:

```
would you like to do job or heigher_studies? 1)not_heigher_studies 2)heigher_studies I would go for heigher_studies
did you have problem solving approach?(yes/no)yes i am good at problem solving
What is your B.tech percentage in numbers? my B.tech percentage is 86
[86]
Are you good in aptitude?(yes/no)yes
Are you a logical thinker?(yes/no)yes  i am
Are you intrested in research?(yes/no)definitely yes
Whats your financial condition ?(weak/strong/medium)strong.
Are you intrested in coding ?(y/n)yes like coding very much
Are you project oriented ?(y/n)yes i am
Which exam do you like to give ?(CAT/GATE/GRE)gre
would you like to make your hobby as a carrier?(y/n)no
```

Fact generated:

```
heigher_studies(yes).
problem_solving(yes).
marks(yes).
aptitude(yes).
logical_thinking(yes).
research(yes).
financial(strong).
code(yes).
project_oriented(yes).
give_which_eaxm(gre).
hobbies(no).
```

Career advice:

```
?- initial.
what should I do next after B.tech CSE?
it seems you are having intrest in technical feild with some int
rest in projects and research area.
Recommendation for Master Of Science(MS)
 you have to crack the GRE as your btech percentage are fit.
following branches you can opt after that:
Artificial Intelligence
 Machnine learning
 Robotics
 Cyber security
 human computer intreacrion


ALL THE BEST
true.
```

1.3.MBA
Question asked:

```
would you like to do job or heigher_studies? 1)not_heigher_studies 2)heigher_studies I want to got for heigher_studies .
did you have problem solving approach?(yes/no)yes i am having problem solving approach.
What is your B.tech percentage in numbers? I scored 88 percentage in B.tech
[88]
Are you good in aptitude?(yes/no)yes i am good at this.
Are you a logical thinker?(yes/no)yes i am logical thinker
Are you intrested in research?(yes/no)yes i am inrested in research.
Whats your financial condition ?(weak/strong/medium)strong financially.
Are you intrested in coding ?(y/n)yes i love coding.
Are you project oriented ?(y/n)yes i make projects.
Which exam do you like to give ?(CAT/GATE/GRE)CAT
would you like to make your hobby as a carrier?(y/n)yes i will because i am passionate about my dancing and poem writting.
```

Fact generated:

```
output.txt  X

 1 heigher_studies(yes).
 2 problem_solving(yes).
 3 marks(yes).
 4 aptitude(yes).
 5 logical_thinking(yes).
 6 research(yes).
 7 financial(strong).
 8 code(yes).
 9 project_oriented(yes).
10 give_which_eaxm(cat).
11 hobbies(yes).
```

Career advice:

```
?- initial.
what should I do next after B.tech CSE?
Recommendation for Master of Buisness Administration(MBA)
You have to crack CAT with good percentile and can do buisness a
fter that,
 following subject can be opt in MBA
Human Resource Management
Customer Relationship Management
Operation Management
Marketing and many more subjects will build your


ALL THE BEST
true.
```

2.Non-Heigher Studies:
   2.1.Buisness
      2.1.1. Entrepreneurship

Question asked:

```
would you like to do job or heigher_studies? 1)not_heigher_studies 2)heigher_studies No no not_heigher_studies
Are you intreseted in buisness?? 1)yes 2)no yes i am even i read business magzines
Whats your financial condition ?' 1)weak 2)strong 3)medium ya it is strong
Did you like to inteact with peoples ?(y/n) yes i like to inreact with them because it let me help to  get ideas.
Can you able to think of an innovation or having thought of new ideas  ?(can/can't)yes can say that
did you have leadership quality?(y/n) yes i am having leadership quality
Are you mentally strong to take risk ?(can/can't) yes i can take risks it will make me strong
would you like to make your hobby as a carrier?(y/n)yes i can
```

Fact generated:

```
output.txt  X

 1 heigher_studies(no).
 2 give_which_eaxm(not_intrested).
 3 buisness(yes).
 4 give_which_eaxm(not_intrested).
 5 financial(strong).
 6 intreact(yes).
 7 idea(can).
 8 leadership(yes).
 9 risk(can).
10 hobbies(yes).
```

Career advice:

```
?- initial.
what should I do next after B.tech CSE?
You have qulities of a a leadership also able to handle risks will  direct you towrardstrong mentality person and can eun an organization.
Recommondation for Enterpreneur
 consultant
 event palnning
 freelencer
 blog consulting
 computer trainee
 data entry
 web designer
 home tutors


ALL THE BEST
true.
```

2.2.Non-Buisness

2.2.1. Government job

Question asked:

```
would you like to do job or heigher_studies? 1)not_heigher_studies 2)heigher_studies No i don't want to go for not_heigher_studies
Are you intreseted in buisness?? 1)yes 2)no no not intrested in that too
Are you intrested in coding ?' 1)yes 2)no no not that much
Are you phyically fit and have kind a sports-man spirit ? ?' 1)very_strong 2)fit you can say fit
did you have problem solving approach?? 1)yes 2)no yes i have
Are you good in aptitude?? 1)yes 2)no yes i have
'Are you a logical thinker?' 1)yes 2)no yes i am
Are you project oriented ?' 1)yes 2)no no
'Would you like to help common people and feel good to serve them as your duty?' 1)yes 2)no yes i like to intreact with them talk to them so can tackle their situatio
Whats your financial condition ?' 1)weak 2)strong 3)medium medium i am from middle class family
'Hows your management skill , can you able to manage and organise the things properly ?' 1)yes 2)no yes i am good at that and can manage thing properly
would you like to make your hobby as a carrier?(y/n)no
```

Fact generated:

```
 1 heigher_studies(no).
 2 give_which_eaxm(not_intrested).
 3 buisness(no).
 4 code(no).
 5 physical(fit).
 6 problem_solving(yes).
 7 aptitude(yes).
 8 logical_thinking(yes).
 9 project_oriented(no).
10 serving_people(yes).
11 financial(medium).
12 management_skill(yes).
13 hobbies(no).
```

Career advice:

```
?- initial.
what should I do next after B.tech CSE?

it seems like you are having logical thinking with problem solving approach and you like to serve people and helping them as a duty.
Recommendation for a government job(public sectors)
 PSU after cracking gate exam with good score
 ISRO[Indian space research organization]
 IOCL[Indian oil coorporation unit]
 DRDO[Defense research and development organization]
 BARC[Bhabha atomic research center]
 Power Grid
 ONGC[Oil and natural gas corporation]
 Public service commission(PSC) exam have to crack for Assistance Professor,employment officer, forest officer etc.


ALL THE BEST
true.
```

2.2.2. IT industry job
Question asked:

```
would you like to do job or heigher_studies? 1)not_heigher_studies 2)heigher_studies  not_heigher_studies i am fine with it
Are you intreseted in buisness?? 1)yes 2)no no i am not
Are you intrested in coding ?' 1)yes 2)no yes i like  coding
did you have problem solving approach?? 1)yes 2)no yes i am
Are you good in aptitude?? 1)yes 2)no yes am good at that
'Are you a logical thinker?' 1)yes 2)no yes i am
'Hows your management skill , can you able to manage and organise the things properly ?' 1)yes 2)no yes , i have good management skill
Whats your financial condition ?' 1)weak 2)strong 3)medium medium
Are you project oriented ?' 1)yes 2)no yes i make projects using different langauges
would you like to make your hobby as a carrier?(yes/no)yes
```

Fact generated:

output.txt

```
 1 heigher_studies(no).
 2 give_which_eaxm(not_intrested).
 3 buisness(no).
 4 code(yes).
 5 problem_solving(yes).
 6 aptitude(yes).
 7 logical_thinking(yes).
 8 management_skill(yes).
 9 financial(medium).
10 project_oriented(yes).
11 hobbies(yes).
```

Career advice:

```
?- initial
what should I do next after B.tech CSE?
it seems like you are having logical thinking with problem solving approach but need to a job to earn money so you can plan something good for you furthur.
Recommendation for job in IT industry as developer or other things you are fit for job(IT Industry)so as per your intrest you can choose any of the following feild in IT industry
 Web developer
 software developer
 infomation security specialist
 database administrator
 cloud computing engineer
 networking adminstrator
 quality assurance
 application devceloper
 backend developer
 data engineer

ALL THE BEST
true.
```

2.2.3. Defense
Question asked:

```
would you like to do job or heigher_studies? 1)not_heigher_studies 2)heigher_studies not_heigher_studies it is enough for me now
Are you intreseted in buisness?? 1)yes 2)no no don't want to be a business guy
Are you intrested in coding ?' 1)yes 2)no no am not interested in code that much
Are you phyically fit and have kind a sports-man spirit ? ?' 1)very_strong 2)fit I can say I am very_strong i have that sports man spirit
'Would you like to help common people and feel good to serve them as your duty?' 1)yes 2)no yes i like it very much
Whats your financial condition ?' 1)weak 2)strong 3)medium medium you can say as i am form middle class family
Can you able to adapt the changes around you in terms of cultures and peoples ? 1)yes 2)no yah definitly even i like to move from places
did you have leadership quality?' 1)yes 2)no yes i can say that
would you like to make your hobby as a carrier?(y/n)yes i like singing and can do that if i get chance
```

Fact generated:

```
 1 heigher_studies(no).
 2 give_which_eaxm(not_intrested).
 3 buisness(no).
 4 code(no).
 5 physical(very_strong).
 6 serving_people(yes).
 7 financial(medium).
 8 adaptibility(no).
 9 leadership(yes).
10 hobbies(yes).
11 |
```

Career advice:

```
?- initial.
what should I do next after B.tech CSE?
it seems like you are having logical thinking with problem solving approach and you like to serve people and helping them as a duty.
Recommandation to get job in Defense as you are mentally and physically strong
so you can choose following field in defens. And for that you have to crack SSB,NDA etc exam
 indian army
 indian air force
 indian navy


ALL THE BEST
true.
 _
```

3.Make hobby as a career

Question asked:

```
would you like to do job or heigher_studies? 1)not_heigher_studies 2)heigher_studies not_heigher_studies
Are you intreseted in buisness?? 1)yes 2)no no i am not
Are you intrested in coding ?' 1)yes 2)no no
Are you phyically fit and have kind a sports-man spirit ? ?' 1)very_strong 2)fit fit
did you have problem solving approach?? 1)yes 2)no yes
Are you good in aptitude?? 1)yes 2)no no
'Are you a logical thinker?' 1)yes 2)no yes
Are you project oriented ?' 1)yes 2)no no i am not that much techie
'Would you like to help common people and feel good to serve them as your duty?' 1)yes 2)no yes i like that
Whats your financial condition ?' 1)weak 2)strong 3)medium strong, as I belong to buisness fa,ily
'Hows your management skill , can you able to manage and organise the things properly ?' 1)yes 2)no yes i can
would you like to make your hobby as a carrier?(yes/no)yes i love to
```

Fact generated:

```
output.txt  ✕

  1 heigher_studies(no).
  2 give_which_eaxm(not_intrested).
  3 buisness(no).
  4 code(no).
  5 physical(fit).
  6 problem_solving(yes).
  7 aptitude(no).
  8 logical_thinking(yes).
  9 project_oriented(no).
 10 serving_people(yes).
 11 financial(strong).
 12 management_skill(yes).
 13 hobbies(yes).
```

Career advice:

```
?- initial.
what should I do next after B.tech CSE?
 it seems that you can make your hobbies as intrest so you
can choose following as your career - photographer
  interior decorator
  travelling agent
  wedding planner
  event planner


ALL THE BEST
true.
```

4.Other (need to think more for career).

Question asked:

```
would you like to do job or heigher_studies? 1)not_heigher_studies 2)heigher_studies not_heigher_studies
Are you intreseted in buisness?? 1)yes 2)no no
Are you intrested in coding ?' 1)yes 2)no not that much only little
Are you phyically fit and have kind a sports-man spirit ? ?' 1)very_strong 2)fit i can say very strong
did you have problem solving approach?? 1)yes 2)no no not that much
Are you good in aptitude?? 1)yes 2)no no not sure
'Are you a logical thinker?' 1)yes 2)no no i am not actually
Are you project oriented ?' 1)yes 2)no no not that much
'Would you like to help common people and feel good to serve them as your duty?' 1)yes 2)no yes i like the intreaction
Whats your financial condition ?' 1)weak 2)strong 3)medium medium
'Hows your management skill , can you able to manage and organise the things properly ?' 1)yes 2)no yes i can manage the trhings
would you like to make your hobby as a carrier?(yes/no)no i dont have as such hobby which make money for me h :)
```

Fact generated:

output.txt ✕

```
 1 heigher_studies(no).
 2 give_which_eaxm(not_intrested).
 3 buisness(no).
 4 code(no).
 5 physical(fit).
 6 problem_solving(no).
 7 aptitude(no).
 8 logical_thinking(no).
 9 project_oriented(no).
10 serving_people(yes).
11 financial(medium).
12 management_skill(yes).
13 hobbies(no).
```

Career advice:

```
?- initial.
what should I do next after B.tech CSE?
 it seems you don not want to make your hobbies as your carieer too, so
 you can become home tutors  as you did B.tech so can teach home tutions  , Or
 you should think again about yourself , so take some time and think whether you want
 to do something right now or improve youself on B.tech subjects


ALL THE BEST
true.

?- ■
```

ASSUMPTIONS:

1.As users can reply as per their own way but each of the replies must contain yes, no, can, can not, etc kind of words because i had fixed some of the words on the basis of which i am going to track the flow of my career.
2.And the must contain words were specified in the question with brackets.

NOTE:

I generate the facts from the python code and then that facts are read and on the basis of present fact the particular clause which is satisfied will advise the career.
The facts are generated in output.txt file and will be read by the prolog program and reduced.

REFERENCED:

1.https://stackoverflow.com/questions/22774477/read-the-whole-fact-from-external-file