

ARTIFICIAL INTELLIGENCE

Lab Assignment 1

Questions:

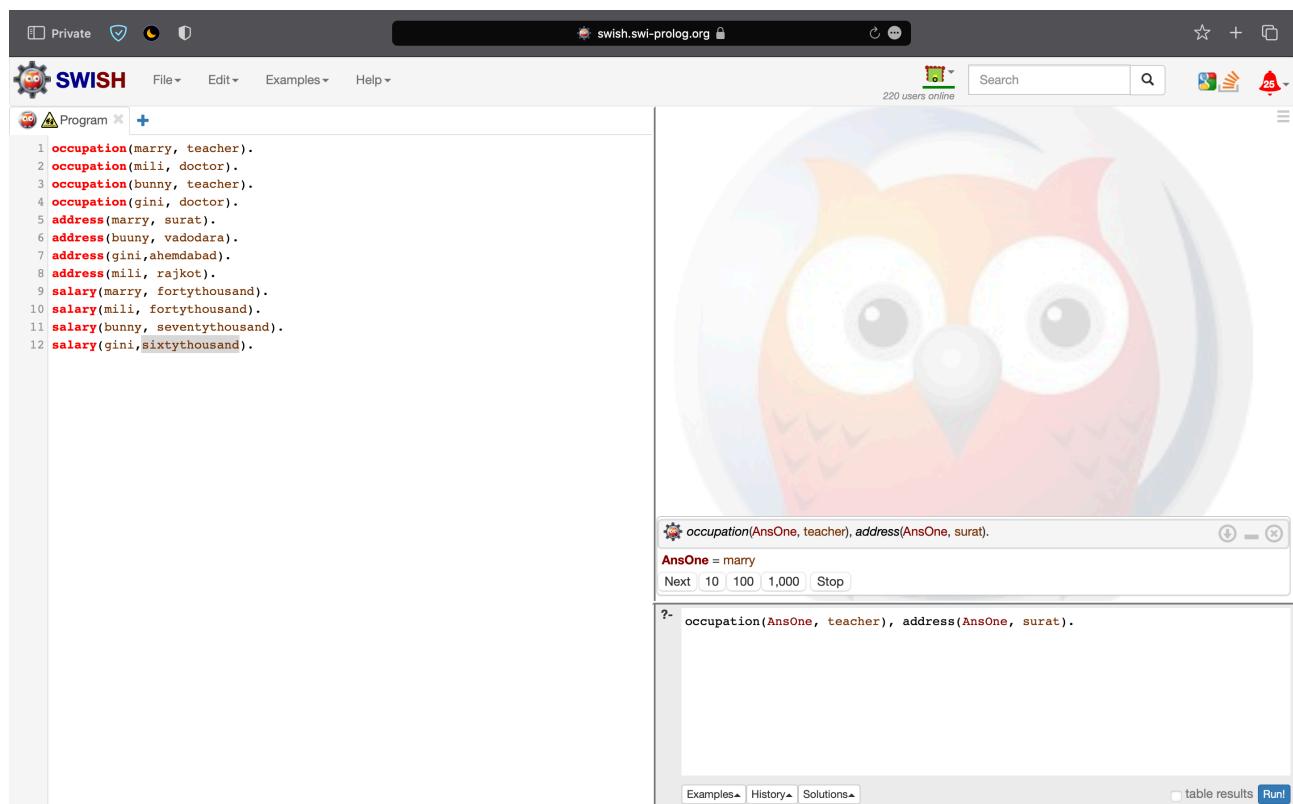
1. Write the following facts (English Statement) in Prolog. Now, use these statements as knowledge based for answering the following Queries. Use following facts: i) occupation/2 ii) address/2 iii)salary/2 for knowledge base creation.

1. Marry is a teacher.
2. Mili is a doctor.
3. Bunny is a teacher
4. Gini is a doctor.
5. Marry lives in Surat.
6. Bunny lives in Vadodara.
7. Gini lives in Ahmedabad.
8. Mili lives in Rajkot.
9. Marry earns fortythousand rupees.
10. Mili earns fiftythousand rupees.
11. Bunny earns seventythousand rupees.
12. Gini earns sixtythousand rupees.

Queries:

1. Find all teachers who lives in Surat.

Solution: occupation(AnsOne, teacher), address(AnsOne, surat).



The screenshot shows the SWISH Prolog interface. On the left, there is a code editor window titled "Program" containing the following Prolog code:

```
1 occupation(marry, teacher).
2 occupation(mili, doctor).
3 occupation(bunny, teacher).
4 occupation(gini, doctor).
5 address(marry, surat).
6 address(bunny, vadodara).
7 address(gini, ahmedabad).
8 address(mili, rajkot).
9 salary(marry, fortythousand).
10 salary(mili, fiftythousand).
11 salary(bunny, seventythousand).
12 salary(gini, sixtythousand).
```

On the right, there is a large owl logo. Below the owl, a query window displays the results of the query:

```
?- occupation(AnsOne, teacher), address(AnsOne, surat).
AnsOne = marry
Next 10 100 1,000 Stop
```

At the bottom of the interface, there are tabs for "Examples", "History", "Solutions", and buttons for "table results" and "Run".

2. Find all doctors who earns sixtythousand rupees.

Solution: occupation(AnsTwo, doctor), salary(AnsTwo, sixtythousand).

The screenshot shows the SWISH Prolog interface. In the top-left panel, there is a code editor containing the following Prolog code:

```
1 occupation(marry, teacher).
2 occupation(mili, doctor).
3 occupation(bunny, teacher).
4 occupation(gini, doctor).
5 address(marry, surat).
6 address(bunny, vadodara).
7 address(gini, ahmedabad).
8 address(mili, rajkot).
9 salary(marry, fortythousand).
10 salary(mili, fortythousand).
11 salary(bunny, seventythousand).
12 salary(gini, sixtythousand).
```

In the bottom-right panel, there is a search bar with the query "occupation(AnsTwo, doctor), salary(AnsTwo, sixtythousand)". Below the search bar, the variable "AnsTwo" is bound to "gini". The query result is shown as "?- occupation(AnsTwo, doctor), salary(AnsTwo, sixtythousand).".

3. Find all teachers who doesnot live in Ahmedabad.

Solution: occupation(AnsThree, teacher),not(address(AnsThree, ahemdabad)).

The screenshot shows the SWISH Prolog interface. In the top-left panel, there is a code editor containing the same Prolog code as the previous screenshot:

```
1 occupation(marry, teacher).
2 occupation(mili, doctor).
3 occupation(bunny, teacher).
4 occupation(gini, doctor).
5 address(marry, surat).
6 address(bunny, vadodara).
7 address(gini, ahmedabad).
8 address(mili, rajkot).
9 salary(marry, fortythousand).
10 salary(mili, fortythousand).
11 salary(bunny, seventythousand).
12 salary(gini, sixtythousand).
```

In the bottom-right panel, there is a search bar with the query "occupation(AnsThree, teacher),not(address(AnsThree, ahemdabad))". Below the search bar, the variables "AnsThree" are bound to "marry" and "bunny". The query result is shown as "?- occupation(AnsThree, teacher),not(address(AnsThree, ahemdabad)).".

4. Find all teacher who lives in Rajkot.

Solution: occupation(AnsFour, teacher),(address(AnsFour, rajkot)).

The screenshot shows the SWISH Prolog interface. On the left, there is a code editor window containing the following Prolog code:

```
1 occupation(marry, teacher).
2 occupation(mili, doctor).
3 occupation(bunny, teacher).
4 occupation(gini, doctor).
5 address(marry, surat).
6 address(bunny, vadodara).
7 address(gini, ahmedabad).
8 address(mili, rajkot).
9 salary(marry, fortythousand).
10 salary(mili, fortythousand).
11 salary(bunny, seventythousand).
12 salary(gini, sixtythousand).
```

On the right, there is a results window with the following content:

```
?- occupation(AnsFour, teacher),(address(AnsFour, rajkot)).  
false  
?- occupation(AnsFour, teacher),(address(AnsFour, rajkot)).
```

At the bottom of the interface, there are tabs for Examples, History, Solutions, and Run!.

5. Find all doctors who lives in Ahmedabad and earns sixtythousand rupees.

The screenshot shows the SWISH Prolog interface. On the left, there is a code editor window containing the same Prolog code as the previous screenshot:

```
1 occupation(marry, teacher).
2 occupation(mili, doctor).
3 occupation(bunny, teacher).
4 occupation(gini, doctor).
5 address(marry, surat).
6 address(bunny, vadodara).
7 address(gini, ahmedabad).
8 address(mili, rajkot).
9 salary(marry, fortythousand).
10 salary(mili, fortythousand).
11 salary(bunny, seventythousand).
12 salary(gini, sixtythousand).
```

On the right, there is a results window with the following content:

```
?- occupation(AnsFive, doctor),address(AnsFive, ahmedabad),salary(AnsFive,sixtythousand).  
AnsFive = gini  
?- occupation(AnsFive, doctor),address(AnsFive, ahmedabad),salary(AnsFive,sixtythousand).
```

At the bottom of the interface, there are tabs for Examples, History, Solutions, and Run!.

Solution: occupation(AnsFive, doctor), address(AnsFive, ahemdabad), salary(AnsFive,sixtythousand).

6. Find all teachers who lives in Surat or Vadodara.

Solution: occupation(AnsSix, teacher),(address(AnsSix, surat);address(AnsSix, vadodara)).

The screenshot shows the SWISH Prolog interface. On the left, there is a code editor window titled "Program" containing the following Prolog code:

```
1 occupation(marry, teacher).
2 occupation(mili, doctor).
3 occupation(bunny, teacher).
4 occupation(gini, doctor).
5 address(marry, surat).
6 address(bunny, vadodara).
7 address(gini, ahemdabad).
8 address(mili, rajkot).
9 salary(marry, fortythousand).
10 salary(mili, fortythousand).
11 salary(bunny, seventythousand).
12 salary(gini, sixtythousand).
```

On the right, the main window displays the query and its results. The query is:

```
?- occupation(AnsSix, teacher), (address(AnsSix, surat); address(AnsSix, vadodara)).
```

The results are:

```
AnsSix = marry
AnsSix = bunny
```

Below the results, the command prompt shows the query again:

```
?- occupation(AnsSix, teacher), (address(AnsSix, surat); address(AnsSix, vadodara)).|
```

At the bottom of the interface, there are tabs for "Examples", "History", "Solutions", and buttons for "table results" and "Run".