Assignment 3 CT331 Assignment 3: Prolog Rules

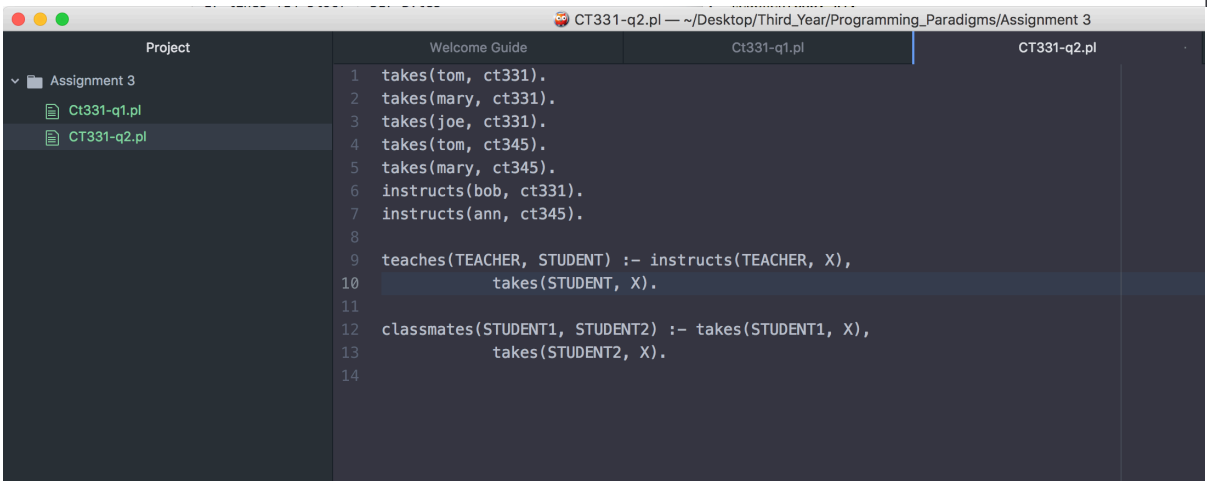
James Hehir 13318731

Question 1:

Q	Statement	Result
1	sunny AND warm	True
2	sunny AND cold	False
3	sunny OR cold	True
4	(sunny OR cold) AND warm	True
5	happy XOR sunny	False
6	warm XOR (NOT happy)	True
7	early NAND happy	False
8	(late NOR (NOT early)) AND (windy OR (NOT warm))	True
9	(cloudy AND windy) AND (warm AND early)	False
10	(cloudy AND windy) XOR (warm OR early)	True

Question 2:

```
Welcome to SWI-Prolog (threaded, 64 bits, version 7.6.1)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

For online help and background, visit http://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?- ['/Users/JimmyHehir/desktop/Third_Year/Programming_Paradigms/Assignment 3/Ct331-q2.pl'].
true.

?- teaches(bob, X).
X = tom
X = mary
X = joe.

?- teaches(X, mary).
X = bob
X = ann.

?- teaches(ann, joe).
false.

?- classmates(tom, mary).
true .

?- classmates(mary, joe).
true .

?- classmates(tom, joe).
true
false.

?-
```



Q4. It returns false because ann doesn't teach joe as defined in the facts.

Question 3.

```
Welcome to SWI-Prolog (threaded, 64 bits, version 7.6.1)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

For online help and background, visit http://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?- [H | T] = [1, 2, 3]
|    .
H = 1,
T = [2, 3].

?- [H | [H1 | T]] = [1, 2, 3, 4, 5]
|    .
H = 1,
H1 = 2,
T = [3, 4, 5].
```

Figure 1_ Q1 & Q2

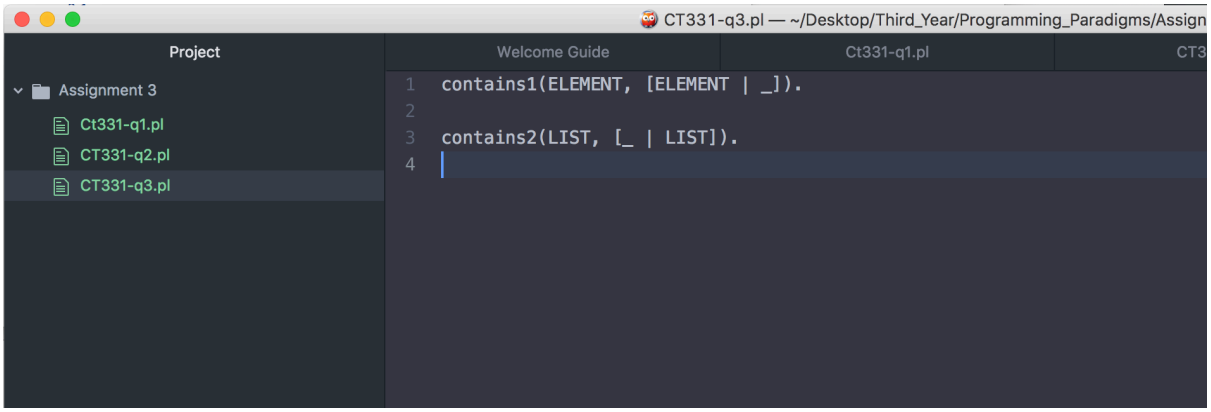


Figure 2_ Q3 & Q4

```
Welcome to SWI-Prolog (threaded, 64 bits, version 7.6.1)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

For online help and background, visit http://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?- ['/Users/JimmyHehir/desktop/Third_Year/Programming_Paradigms/Assignment 3/Ct331-q3.pl'].
Warning: /Users/JimmyHehir/desktop/Third_Year/Programming_Paradigms/Assignment 3/Ct331-q3.pl:1:
          Singleton variables: [ELEM,ELEMENT]
true.

?- ['/Users/JimmyHehir/desktop/Third_Year/Programming_Paradigms/Assignment 3/Ct331-q3.pl'].
true.

?- contains1(Y, [1,2,4,5,6].
ERROR: Syntax error: Operator expected
ERROR: contains1(Y, [1,2,4,5,6]
ERROR: ** here **
ERROR:  .
?- contains1(Y, [1,2,4,5,6]).
Y = 1.
```

Figure 3_ Q5