lec 11: PROLOG.

SWI-PROLOG.

→ Propositional logic.
→ Predicate logic.

Two things to Note
1- facts.
2- Rules.

facts are predicates without Variables.

Ex 66

```
instructor(chan, math273).
instructor(patel, ee222).
instructor(grossman, cs301).
enrolled(kevin, math273).
enrolled(juana, ee222).
enrolled(juana, cs301).
enrolled(kiko, math273).
enrolled(kiko, cs301).
```

```
instructor(X, Y).
X = chan
Y = math273.
X = patel.
Y = ee222.
X = grossman.
Y = cs301.
```

1- Capital letters are used for Variables.
2- period at the end.
3- small case arguments / parameters / inputs for predicates / indicates constants
4- predicates usually are also small letter case.

Rules: They are made up of

Rules :- They are made up of Prolog facts. Using logical connectives. $\wedge$, $\vee$.

$\wedge$ = ,

$\vee$ = ;

⇒ instructor, enrolled.

instructor: teacher Name. Course

enrolled: Student, Course

Who teaches to whom.

⇒ Tell me who are the students of a certain teacher.

instructor → enrolled →.

P teaches S when

if P is the instructor of a Course C and student S is enrolled in Course C.

⇒

teaches(P, S) :- instructor(P, C), enrolled(S, C).

:- Implication if.

Rule. ⇒ $\wedge$, $\vee$.

duplications.

Existing predicates.

Variables.

teaches(P, jvana) :- instructor(P, C), enrolled(jvana, C).

instructor(P, ee222)

instructor(P, cs301).

P: patel.

P: grossman.

enrolled(jvana, ee222) C = ee222

enrolled(jvana, cs301). C = cs301.

enrolled(juana, ec222). C = ec222
enrolled(juana, cs301). C = cs301.

likes(mary, food).
likes(mary, wine).
likes(john, mary).

1- John likes anything that mary likes. ⇒ Rule?

$p \wedge q \rightarrow q \wedge p$

maryjohn(X) :- likes(mary, X), likes(john, X).

2- John likes anyone who likes wine ⇒ Rule?

johnanyone(John) :- likes(john, X), likes(X, wine).

3- John likes anyone who likes themselves. ⇒ Rule?

? :- likes(john, X), likes(X, X).