

Introduction to Artificial Intelligence, Winter Term 2023  
Project 2: Prolog Cheat-Sheet

These are some tips and reminders of Prolog to reference if needed. And you can always reference the documentation for more info <https://www.swi-prolog.org/>

1. Syntax Basics:

- Variables must begin with an **upper** case.
- Constants, Predicates and function symbols must begin with a **lower** case.

| FOL      | Prolog         |
|----------|----------------|
| $\wedge$ | ,              |
| $\vee$   | ;              |
| $\neg$   | $\backslash +$ |

2. **Defining a predicate** A predicate has a head and a body and the body must end in . (a dot). Here is an example for a predicate that finds the greatest common divisor of A and B and the result is G.

```
gcd(A, B, G):-  
  (B=0, G=A);  
  (A>B,B>0,C is A mod B,gcd(B, C, G));  
  (B>A,A>0,C is B mod A,gcd(B, C, G)).
```

Another way is to split the disjunctions into separate cases as follows:

```
gcd(A, 0, A).  
gcd(A, B, G):-  
  A>B,  
  B>0,  
  C is A mod B,  
  gcd(B, C, G).  
  
gcd(A, B, G):-  
  B>A,  
  A>0,  
  C is B mod A,  
  gcd(B, C, G).
```

### 3. Unification

- Prolog checks whether two expressions unify with the unification symbol =
- For mathematical expressions, it is recommended to use `is` or `==` to compare the expressions (`is` evaluates the expression after it. `==` evaluates both sides)

### 4. Work environment

- You can use the SWI-Prolog interpreter which is available for download here: <https://www.swi-prolog.org/>
- You can use any editor.
- Prolog file extension is `.pl`
- SWI-Prolog has an online version with an editor <https://swish.swi-prolog.org/>
- to consult (read) a file in SWI-Prolog, use the `consult` command or File -> Consult.
- To reload a file after making some changes to it, use the `make.` command.