



CLIPS

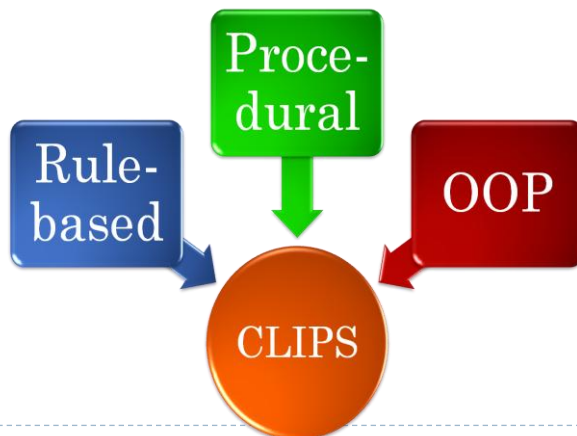
C LANGUAGE INTEGRATED PRODUCTION SYSTEM

Lecture# 1
Expert System lab Work



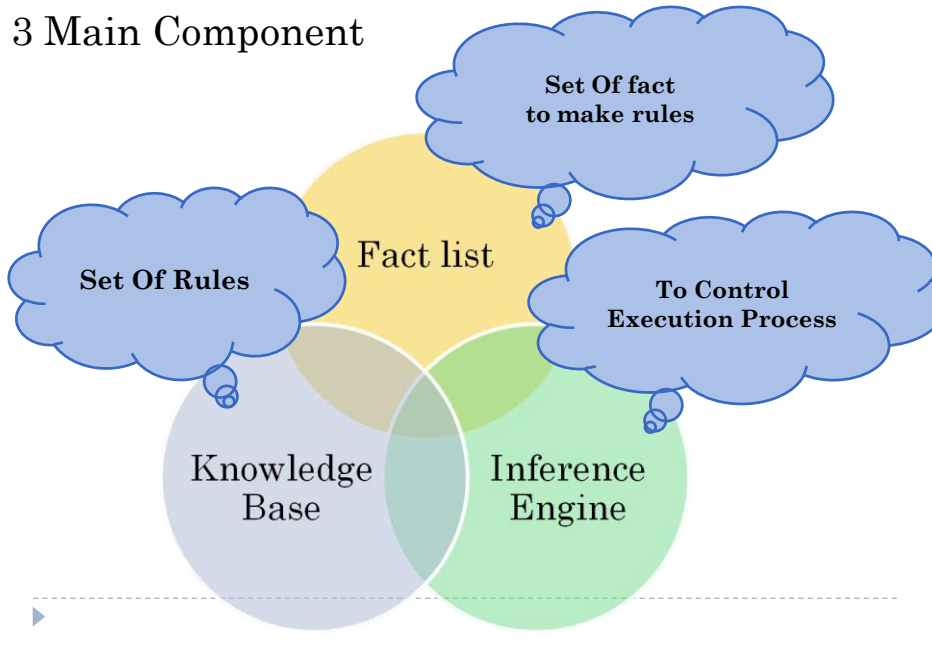
INTRODUCTION

Representation and Reasoning Knowledge



Environment in CLIPS

3 Main Component



NOTATION

- Like LISP programming Language signed by double colon “()”.

- e.g :

(exit)

- **Case Sensitive**

DATA TYPE

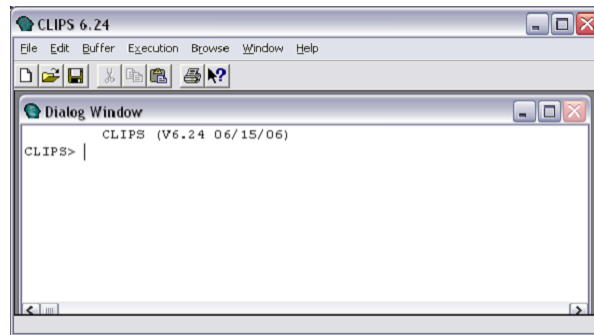
○ There are 7 data type called as CLIPS *primitive data type* :

1. **Float**
2. **Integer**
3. **Symbol**
4. **String**
5. **external address**
6. **instance name**
7. **instance address.**



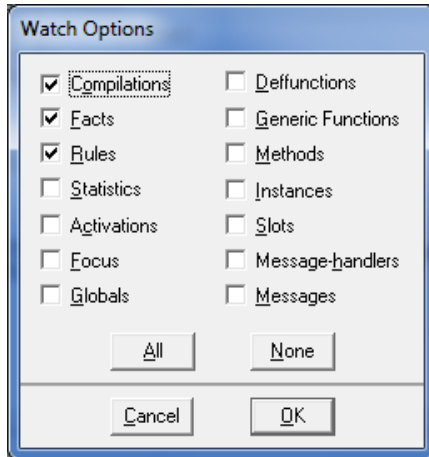
START WITH CLIPS

○ By Default interface of CLIPS is *command promt* as interpreter



Mengaktifkan Watch Option

Execution - Watch



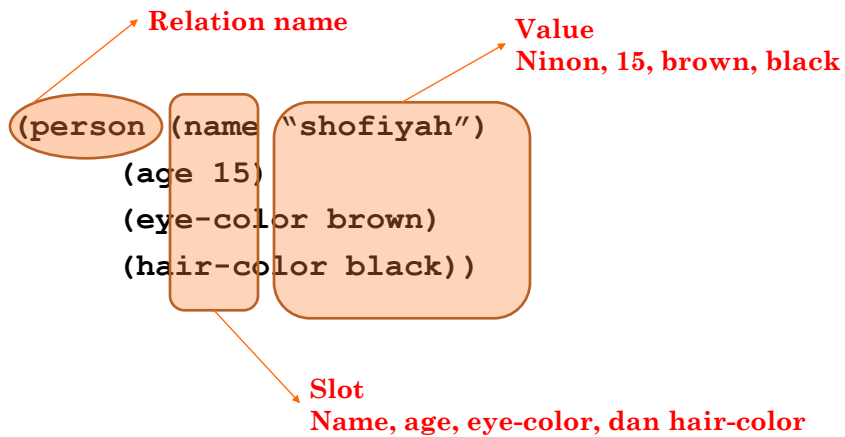
Tujuan

Proses Masuk dan Keluar Fakta ke/dari fact-list dapat terlihat

FACTS

- To solve the problem in expert system, we must have data will became a resource of knowledge.
- Data or Information in CLIPS called as set of facts.
- The facts consist of **relation-name** and followed by **slot**

EXAMPLE



DEFTEMPLATE CONSTRUCTION

- Before the facts is made, CLIPS must know suitable slot for being defined to a relation name
- Mechanisme to create slot is deftemplate construction
- Deftemplate like format of the record in C or Pascal programming language.

SYNTAX

- Deftemplate syntax

```
(deftemplate <relation-name> [optional-  
  coment] <slot-definition>*)
```

- Syntax of description <slot-definition>

```
(slot <slot-name> | (multislot <slot-name>))
```



example

- Deftemplate Person

```
(deftemplate person  
  (slot name)  
  (slot age)  
  (slot eye-color)  
  (slot hair-color))
```

- *Deftemplate-facts are the fact with format*
deftemplate

- *ordered-facts are the fact without format*
deftemplate



ADD, MODIFICATION, DUPLICATE AND REMOVE FACTS

○ Adding Fact

Facts can be added to working memory with
command assert

○ Syntax

(assert <fact>)



Example

```
CLIPS>
(deftemplate person
 (slot name)
 (slot age)
 (slot eye-color)
 (slot hair-color)) <ENTER>
CLIPS>
(assert (person (name "shofiyyah")
 (age 15)
 (eye-color brown)
 (hair-color black))) <ENTER>
<fact-0>
```



EXAMPLE

- To appear set of fact used command (facts).

Identifier dari fakta yg kita miliki

```
CLIPS>(facts)
```

```
f-0 (person (name "shofiyyah") (age
30) (eye-color brown)
(hair-color black))
```

For a total of 1 fact

▶

CONT

- We can use command assert .

```
(assert (person (name "aisyah")
(age 17)
(eye-color blue)
(hair-color brown))) <ENTER>
<Fact-1>
```

- Ketik perintah : (facts)
-
- ▶

ADDITION, MODIFICATION, DUPLICATION AND DELETION FACTS

○ Modification Facts

Use command `(modify)` if facts have been in working memory

○ General Format :

`(modify <fact-index> <slot-modifier>)`



Example

○ Name Modification

```
(modify 1 (name "aisyah kadamusman"))
```

Identifier of fact

Value will be changed

Slot will be modified



example

○ Result of Modification

```
CLIPS> (modify 1 (name "ade trisetyo"))
<Fact-2>
CLIPS> (facts)
f-0    (person (name "ninon") (age 15) (eye-color brown) (hair-color black))
f-2    (person (name "ade trisetyo") (age 17) (eye-color pink) (hair-color black))
For a total of 2 facts.
```

○ Duplication facts

Use Command (**duplicate**)

○ General Format :

(duplicate <fact-index> <slot-duplicate>)

DUPLICATION FACTS

Example

`(duplicate 0 (age 12))`

Fakta apa yang diduplikasi ?

Berapa jumlah fakta di fact-list ?



DELETION FACTS

○ Deletion Facts

Use Command `(retract)`

○ General Format

`(retract <fact-index>)`



○ Deletion Facts
Use Command (**retract**)

○ Example
(**retract 3**)



Excercise

1. Buatlah template untuk fakta mahasiswa (slot nama, nrp, fakultas, departemen,)
2. Tambahkan data 5 berdasarkan template tersebut !
3. Lakukan beberapa perintah sebagai berikut:
 - a. Modifikasi fakultas dan departemen
 - b. Duplikasi data dengan mengubah nama dan nrp mahasiswa ke-3
 - c. Hapus dari working memori mahasiswa pertama

