



WARSAW UNIVERSITY OF TECHNOLOGY

PROGRAMMING IN LOGIC AND SYMBOLIC PROGRAMMING

Maleden Expert System

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1 Expert System

1.1 Project description

Malden(Malaria and Dengue) is an expert system that consider facts and symptoms of mosquito virus to provide diagnosis to patient regarding the specific disease they have. This implies that malden expert system uses knowledge about mosquito virus and fact about patients to suggest whether the person have malaria or dengue.

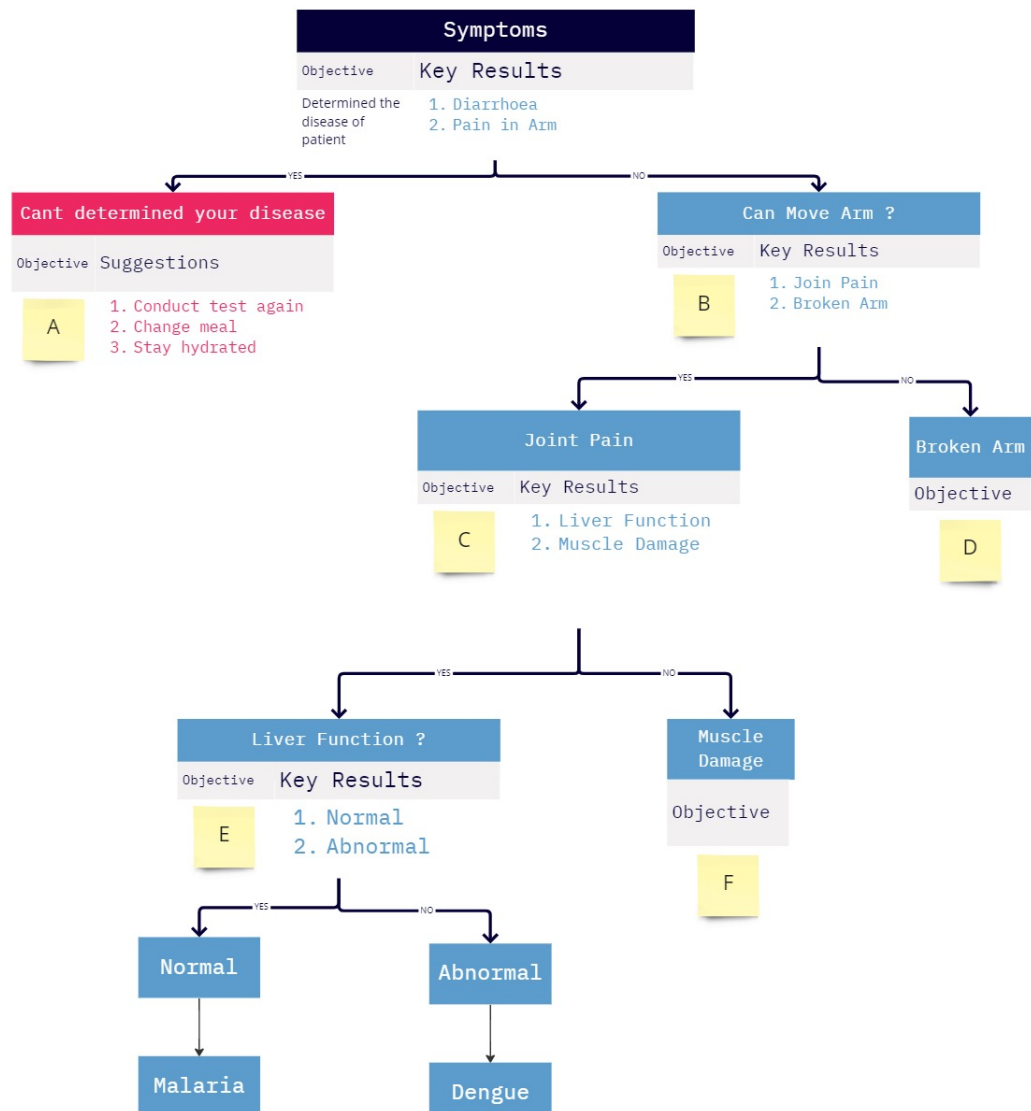


Figure 1: Malden Decision Tree

1.2 Code

maladen :-

```
nl,write("-----WELCOME TO MALADEN EXPERT SYSTEM-----"),
nl,write("-----"),
nl,write("-----THIS IS A DISEASE IDENTIFICATION PROGRAM-----"),
nl,write("-----IT WHETHER THE PERSON HAS MALARIA OR DENGUE-----"),
nl,write("-----IT WORKS BASED ON THE KNOWLEDGE AND FACTS.-----"),
nl,write("-----PLEASE ANSWER THE QUESTION BY TYPING-----"),
nl,write("-----'YES' or 'NO'-----"),
nl,write("-----"),
nl,nl,
assumption(Disease),
write('I believe that you have :-'),
write(Disease),
nl,
write('Thank you and best regards'),
undo.

/*Testing the Assumptions*/
assumption(malaria) :- malaria, !.
assumption(dengue) :- dengue, !.
assumption(fracture) :- fracture, !.
assumption(strain) :- strain, !.
assumption(unknown). /* unidentify case*/

/* Identification Rules*/
```

malaria :-

validate(pain_{in}*arm*),

validate(join_p*ain*),

validate(liver_f*unction*),

validate(normal),

write('Advices and Sugestions:'),

nl,

write('1: Chloroquine phosphate'),

nl,

write('2: Artemisinin-based combination therapies'),

nl,

write('3: Aralen'),

nl,

write('Spray pyrethrin or a similar insecticide in your bedroom before going to bed'),

nl.

dengue :-

validate(pain_{in}*_arm*),

validate(join_{_}*pain*),

validate(liver_{_}*function*),

validate(abnormal),

write('Advices and Sugestions:'),

nl,

write('1: Acetaminophen'),

nl,

write('2: Tepid sponge baths'),

nl,

write('3: Steroidal'),

```
nl,  
write('You should avoid mosquito bites to reduce risk of further transmission'),  
nl.  
fracture :-  
validate(pain_in_arm),  
validate(can_move_arm),  
write('Advice and Sugestions:'),  
nl,  
write('1: Tylenol'),  
nl,  
write('2: Advil'),  
nl,  
write('3: Motrin IB'),  
nl,  
write('Apply ice packs to limit swelling and help relieve pain.').  
nl.  
strain :-  
validate(pain_in_arm),  
validate(join_pain),  
validate(muscle_damage),  
write('Advices and Sugestions:'),  
nl,  
write('1: Tylenol'),  
nl,  
write('2: Anti-inflammatory'),  
nl,  
write('3: Advil'),
```

```
nl,
write('Rest the strained muscle and apply ice for the first few days after the injury'),
nl.
/* Questions */
ask(Question) :-
write('Do you have the following symptom:'),
write(Question),
write('? '),
read(Response),
nl,
( (Response == yes ; Response == y)
→
assert(yes(Question)) ;
assert(no(Question)), fail).
:- dynamic yes/1,no/1.
/*Validation of facts */
validate(S) :-
(yes(S)
→
true ;
(no(S)
→
fail ;
ask(S))).
/* undo all yes/no assertions*/
undo :- retract(yes(_)), fail.
undo :- retract(no(_)), fail.
```

undo.