AI Theory-3

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① (a) $x \in$ chocolate muffins ; $y \in$ chocolate muffin / chocolate(x) ; chocolate(y)

→ $\exists x \exists y \; (P(x) \wedge P(y) \wedge x \neq y)$.

(b) P : No cat likes a smart cat.

$x \in$ cats ; $y \in$ rats. or cat(x) ; rat(y)

→ $\neg \exists x \; \forall y \; (\text{Likes}(x, y) \wedge \text{Smart}(y))$.

(c) the class avg. in english is always higher than the class avg. in Maths.

$x \in$ class. (or) class(x).

→ $\forall x \; \text{Average}(x, \text{english}) > \text{Average}(x, \text{Maths})$.

(d) Diamond & platinum ornaments are precious.

$x \in$ Diamonds ; $y \in$ platinum.

⇒ ~~$\forall x \; \forall y$~~ precious(x) $\wedge$ precious(y).

(or)

$\forall x$ precious(x) $\wedge$ $\forall y$ precious(y).

(e) I don't submit my assignments in AI course implies if I submit my assignments in AI course, then I pass the course with good grades.

$x \in$ me. (self).

⇒ ~~$\forall x$~~ $\neg$ submit(x, AI) → [submit(x, AI) → (pass(AI) $\wedge$ goodgrade(AI))]

(f) sharks and whales attack if they are angry or hungry.

$x \in$ sharks ; $y \in$ whales.

⇒ $\forall x \; \forall y \; [(\text{angry}(x) \vee \text{hungry}(x)) \rightarrow \text{attack}(x)] \wedge$

($\forall x$ all sharks, $\forall y$ all whales) $[(\text{angry}(y) \vee \text{hungry}(y)) \rightarrow \text{attack}(y)]$

(g) It is not the case that some fishes donot swim.

$x \in$ fishes.

⇒ $\neg \exists x (\neg \text{swim}(x))$ or $\forall x \; \text{swim}(x)$.

(2) (h) marry can eat some of the candies all of the time, and she can eat all of the candies some of the time, but she cannot eat all of the candies all the time.

$t \in$ time, $c \in$ candies.

$\rightarrow (\forall t \; \exists c \;\; eat(marry, c)) \wedge (\exists t \; \forall c \;\; eat(marry, c)) \wedge (\forall t \; \forall c \;\; \neg eat(marry, c))$.

(i) there is a fan who likes all superheroes who are not killers.

$x \in$ fans ; $y \in$ superheroes.

$\Rightarrow \exists x \; \forall y \; (likes(x, y) \wedge \neg killers(y))$

(j) there is a shopkeeper in the market who sells items only to those customers who have a membership card of the store.

$x \in$ shopkeeper ; $y \in$ customers.

$\exists x \; \forall y \; (sells(x, y) \wedge membership(y))$.

(2) Given that two robotic arms, V-arm & H-arm moves Vertical and Horizontal direction ~~directions~~ respectively.

And they can moves horizontally & vertically respectively (acc. to note (5)).

assumption :- I assume that both arms V-arm & H-arm are located at top-left & bottom-right positions at outside the box (grid).

⇒ They can be (V-arm & H-arm) objects. Vertically & Horizontally respec.

⇒ that means they can extend their arms to specific coordinate location and can move object.

⇒ V-arm can be burst an object.

③ ⇒ Both the arms have access to any object (Q, X).

Actions:-

① moveVBase (left | right) ⇒ 'V' can move left or right.

② moveHBase (up | down) ⇒ 'H' can move up or down.

③ destroyXObject (given coordinates) ⇒ 'V' destroys 'X' object by given location.

④ ~~moveQ destroy~~ moveQObject (arm , from , to)
⇒ an arm can move object to given location.

⑤ requestVToMove (from , to) ⇒ moving 'V'

⑥ requestHToMove (from , to) ⇒ moving 'H'.

⑦ checkObject (arm , from , to). ⇒ checking object (searching)

③. planning for Organising a Seminar at College.

Action :-

① → InviteAsGuestLecturer (professor X).

Effect:- X is invited as Guest lecturer.

precondition:- X should be a professor.

② estimateBudget (seminar).

Effect:- we come to know budget to conduct seminar.

precondition:- Invited professor.

③ GetMoneyfromCollege (reason) ⇒ from Accounts department.

Effect:- we get money to conduct.

precondition:- Invited professor & estimated Budget.

⑤ InviteStudents ( ) ⇒ by IT department ⇒ i.e., by sending mails.

Effect:- students knows about seminar

(3) precondition:- ~~If~~ taken money to conduct.

(4)(5) ~~Ask~~ setDateOfSeminar()

Effect:- Setting date & time of seminar.

precondition:- Invited professor

(6) AskforHall() ⇒ Academic department.

Effect:- got permission to access a seminar hall.

precondition:- all pre-work is done

(7) AskFMs for maintainance()

Effect:- maintainance work on seminar.

precondition:- know hall & how many students are coming.

(8) Inform Security():

Effect:- security will allow only students of college

precondition:- students are rejistered & ~~it~~ have IDs.

(9) Conduct seminar()

Effect:- Seminar is done. ⇒ (goal)

precondition:- All set for seminars.

These are the important actions which should be done in smooth running of organising a Seminar.

(4) Converting into FOL statements:

(1) find out that they have only two types of parathas

left - chenopodium & Radish.

⇒ Left(chenopodium) ∧ Left(Radish)

(D1)

available(chenopodium) ∧ available(Radish)

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(2) you should check if u like the filing, bect you don't want to order something you will not eat.

filing(x)

$\Rightarrow \exists x \text{ like}(x) . \rightarrow \text{eat}(x)$.

or

order(x). to eat.

(3) you are a picky eater & will not eat some fillings — chenopodium and Radish.

$\Rightarrow$ filling(chenopodium) $\wedge$ filling(Radish) $\wedge \neg$like(x).

($\because$ filling(x).)

(4) you will go hungry tonight.

$\Rightarrow$ from (1) $\Rightarrow$ available(chenopodium) $\wedge$ available(Raddish)

from (2) $\Rightarrow$ $\exists x$ like(x) $\rightarrow$ eat(x).

(3) $\Rightarrow$ filling(chen.) $\wedge$ filling(Raddish) $\wedge \neg$like(x)

$\Rightarrow$ from. (1) & (3) $\Rightarrow$ chenopodium & Raddish are available but I don't like these fillings.

$\hookrightarrow \neg$like(me, chenopodium) $\wedge \neg$like(me, Raddish)

(4).

from (4), (2).

$\Rightarrow$ I will not order if I don't like fillings.

$\Rightarrow \neg$ order(me)

$\hookrightarrow$ no food. $\Rightarrow$ I will go hungry tonight.

$\Rightarrow$ It is true.