Semantics

Consider the following abstract syntax together with its associated Montaguelike semantics:

where:

human : $e \rightarrow t$ need : $e \rightarrow (e \rightarrow t)$

1. Compute the semantic representation of the sentence *everybody needs somebody*, the abstract syntax of which is given by the following term:

NEED SOMEBODY EVERYBODY

2. Compute another semantic representation of the sentence *everybody needs* somebody, the alternative abstract syntax of which is given by the following term:

```
QR SOMEBODY (\lambda t. NEED t EVERYBODY)
```

3. Consider a model where the set of entities is {*alice, bob, carol*} and where **human** is interpreted by the following function:

```
\left\{\begin{array}{rrr} alice &\mapsto true\\ bob &\mapsto true\\ carol &\mapsto true \end{array}\right.
```

A. Complete this model by giving an interpretation of **need** such that the semantic representation obtained at Question 1 is true while the one obtained at Question 2 is false.

B. Give another interpretation of **need** such that the semantic representation obtained at Question 2 is true.