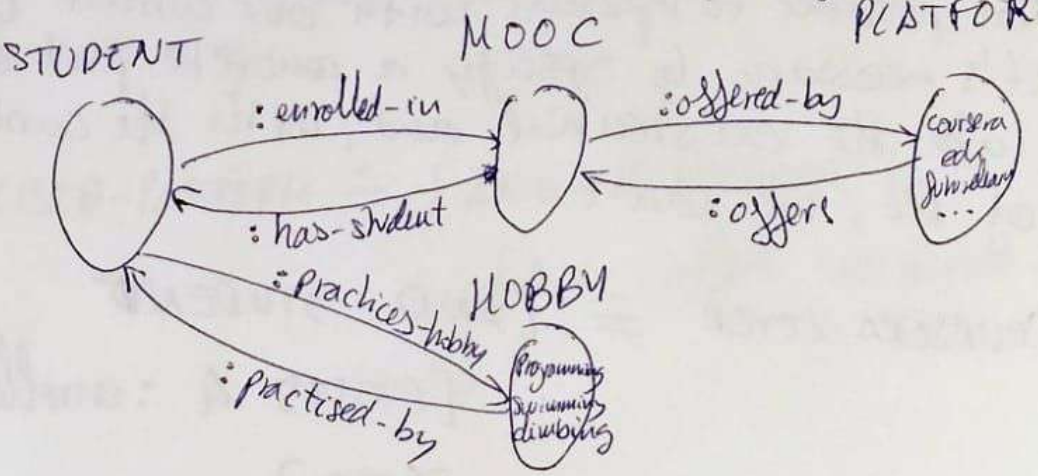
HOMEWORK 7 : DESCRIPTION LOGICS

objects: STUDENT $\subseteq$ THING
HOBBY $\subseteq$ THING
MOOC $\subseteq$ THING
PLATFORM $\subseteq$ THING

Programming $\leftarrow$ HOBBY
coursera $\leftarrow$ PLATFORM
swimming $\leftarrow$ HOBBY
climbing $\leftarrow$ HOBBY
edx $\leftarrow$ PLATFORM
[illegible] $\leftarrow$ PLATFORM
PLATFORM



BUSY-TECHNICAL-STUDENT $\doteq$ [AND STUDENT
[EXISTS 3 :practices-hobby]
[FILLS :practices-hobby programming]
]

PRESENTIAL-STUDENT $\doteq$ [AND STUDENT
there is not such a negation operator $\rightarrow$ [?]

NOT POSSIBLE TO EXPRESS WITH CURRENT DL VERSION

SUCCESSFUL-COURSE $\doteq$ [AND MOOC
[EXISTS 10,000 :has-student]
]

HACKER $\doteq$ student that enjoys programming

* strictly talking, there is no ":enjoys" role between student and HOBBY so we ~~are~~ can't express it.
However, if we consider that having an enjoying a Hobby is the same:

HACKER ≐ [AND STUDENT
[FILLS : practices-hobby programming]
]

~~NETWORK-SECURITY-COURSE~~ network-security-course ≐ [AND MOOC
[EXISTS 100 ??

Not possible to represent with our current logic as it's necessary to specify a concrete part of STUDENTS into the existential and, with the current version of DL, we can't.

COURSERA-LOVER ≐ [AND STUDENT
[EXISTS 4 : enrolled-in]
[???]
[ALL : enrolled-in
[AND MOOC
[FILLS : offered by coursera]
]
]

~~Again, it~~

SPECIALISED-TECHNICAL-COURSE ≐ [AND MOOC
[ALL : has-student HACKER]
]

UNI-PLATFORM-~~COURSE~~
Not possible as we haven't any operator which allows specifying a property for a fixed number. Only EXISTS and it works as "at least".

TECHNICAL-PLATFORM ≐ [AND PLATFORM
[ALL :offers BTS-COURSE] ④
]

④ BTS-COURSE ≐ [AND MOOC
[ALL :has-student BUSY-TECHNICAL-STUDENTS]
]

SPECIALISED-PLATFORM ≐ [AND PLATFORM
[ALL :offers SPECIALISED-TECHNICAL-COURSE]
]