# Database design

## Tables

Room(rName, level, prevRoom, coords, description)

Cords refers the location of the item on the floor plan

Description is a general description of the room’s function

Staff(tutorID, lastName, firstName, room)

Room is the office for the member of staff

Route(from, to, route)

Route is the text description of the route

## Route finding algorithm

### Skeleton and descriptions:

**Route(from, to, stepFree): List of String**

1. Backtrack to height 0 node for both from and to storing list of visited nodes
2. A)If different level then add the lift or stairs to the backtrack and return routeNav(btcFrom, null, LR) + “travel to level to.level + routeNav(btcTo, null, RL)
3. B)If same level then get earliest common node ‘ecn’
4. Return routeNav(btcFrom, ecn, LR) + routeNav(btcTo, ecn, RL)

**Backtrack(from): List of Room**

// using prevRoom value in table create an list of rooms backtracking from the parameter until no prevRoom found. This is known as a height 0 node.

**ECN(btcFrom, btcTo): Room**

// work from the last item in the backtracked lists finding out the leftmost room that the lists have in common.

**RouteNav(backtrack, ecn, direction): List of String directions**

// use backtrack list to call route table up to ecn. Direction is either left to right or right to left when using backtrack.

### Pseudo code

**Route(from, to, stepFree): List of String**

btcFrom = backtrack(from)

btcTo = backtrack(to)

if(from.level == to.level) then

ecn = ECN(btcFrom, btcTo)

return routeNav(btcFrom, ecn, LR) + routeNav(btcTo, ecn, RL)

end if

else if( stepFree = true ) then

btcFrom.add(from.level.lift)

btcTo.add(to.level.lift)

else

btcFrom.add(from.level.stairs)

btcTo.add(to.level.stairs)

end if else

return routeNav(btcFrom, null, LR) + “travel to level to.level + routeNav(btcTo, null, RL)

**Backtrack(from): List of Room**

List btc

btc.add(from)

while (prevRoom = *SELECT prevRoom FROM Room WHERE rName = from.rName* != ‘’) do

btc.addprevRoom

from = prevRoom

od

**ECN(btcFrom, btcTo): Room**

fromPointer = btcFrom.length – 1

toPointer = btcTo.length -1

while( btcFrom.get(fromPointer) = btcTo.get(toPointer) ) do

fromPointer = fromPointer -1

toPointer = toPointer – 1

od

return btcFrom.get(fromPointer + 1)

**RouteNav(backtrack, ecn, direction): String**

If direction = “LR”

pointer = 0

change = 1

Else if direction = “RL”

pointer = backtrack.length – 1

change = -1

While( backtrack.get(pointer) != ecn && pointer >=0 && pointer < backtrack.length ) do

route.add( SELECT directions from Route WHERE from = backtrack.get(pointer) AND to = backtrack.get(pointer + change) )

pointer = pointer + change

od

Return route

## Searching for a Tutor, Pseudo code

Search bar when pressed will contain a hint “Search”

Create a method which retrieves a specific field (e.g. names) from the database. This method will be called within the setup of the search bar. Use this information as a parameter for the setLastSuggestions within the search bar. E.g.

materialSearchBar.setLastSuggestions(suggestList);

Add a text change listener to the setup of the search bar. This should contain override methods (beforeTextChanged),(onTextChanged)and (afterTextChanged).

Also, create a set on search action listener. This will have a methods such as a recyclerview adapter, start search when the search has been confirmed etc.

The startSearch method will contain an adapter which will adapt the information from the database to a recycler view.

The default search result should be set to all results, this will show users all the available options when they first use the search feature.