Algorithm 1 RFIDGraphConstruction (Readers R, ConnectivityBaseGraph G_{conn}, AccessibilityGraph G_{accs})

1: Readers $R' \leftarrow \emptyset$; $DR(\langle \Sigma_{door}\ k', Readers\ RSet \rangle) \leftarrow \emptyset$; Connected Component $CCs \leftarrow \emptyset$; int $m \leftarrow 0$;
2: $G_{RFID}(C, E_r, \Sigma_{reader}\ l_e) \leftarrow (\emptyset, \emptyset, R, NULL)$;
3: **for** each edge d_a in $G_{conn}.E_d$ **do**
4: **for** each reader r_b in R **do**
5: **if** Circle(Mapping1(r_b).loc, Mapping1(r_b).range) covers $Doors(d_a.k)$ **then**
6: insert r_b into R';
7: **if** $|R'| > 0$ **then**
8: delete d_a from $G_{conn}.E_d$; insert $(d_a.k, R')$ into DR; $R' \leftarrow \emptyset$;
9: store all connected components of G_{conn} in CCs;
10: **for** each connected component cc_c in CCs **do**
11: create a new vertex c_m and add it to $G_{RFID}.C$; m++;
12: **for** each vertex v_x in the vertices of cc_c **do**
13: add the mapping $(v_x \rightarrow c_m)$ to $Cells$;
14: **for** each dr_n in DR **do**
15: **for** each e_l in $G_{accs}.l_e^{-1}(dr_n.k')$ **do**
16: $c_p \leftarrow Cells(e_l.v_i)$; $c_q \leftarrow Cells(e_l.v_j)$;
17: **if** $c_p \neq c_q$ **then**
18: **if** $\langle c_p, c_q \rangle$ is not in $G_{RFID}.E_r$ **then**
19: add $\langle c_p, c_q \rangle$ to $G_{RFID}.E_r$;
20: add the mapping ($\langle c_p, c_q \rangle \rightarrow readersequence(dr_n.RSet)$) to $G_{RFID}.l_e$;