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School of
Information Sciences

Poster 20

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Design and Implementation of LoT-RBAC Model

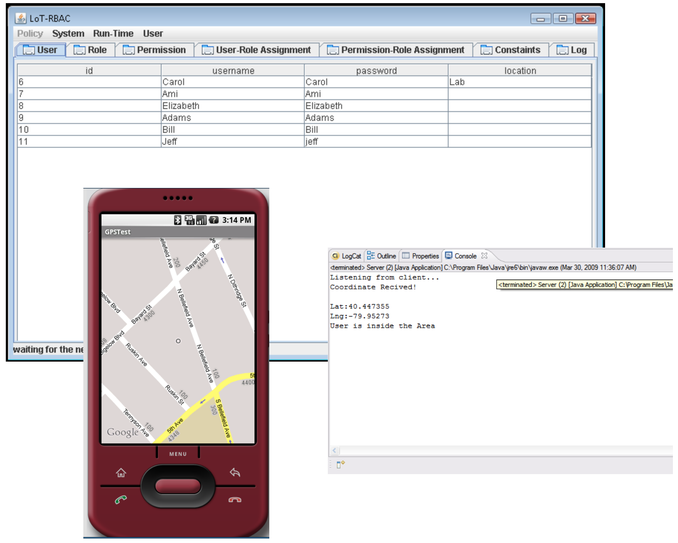
Motivation:

Recent growth in location-based mobile services has introduced a significant need for location and time -based access control management. High mobility of the users and services in the emerging mobile applications makes the issue of controlling a daunting challenge. Location based Service is booming along with development of mobile device. However, few of them are utilized for security purpose.

Our Approach:

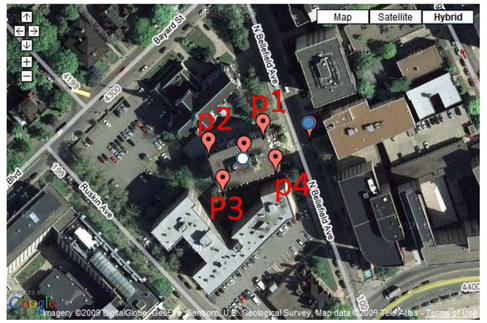
In LoT-RBAC model, we associate the location context to not only users, but to all other elements of RBAC including roles, permissions. By adding location constraints in LoT-RBAC system, access decision can be made upon user, role and permission(object) location.

Location coordinate information of user will be provided to system by utilizing integrated GPS in the mobile device of user. That means



the mobile device will sends its current location coordinates to LoT-RBAC system via network. After receives the coordinates, system would makes use of logical location dictionary which contains logical location names and corresponding coordinate sets. By running a calculation with logical location coordinates and the coordinates received, system can decide whether user is in certain logical location or not. At the end, system sends the result back to the LoT-BAC engine in order to make access decision.

Results



P1:Lat:40.447523 Lon:-79.952541
P2:Lat:40.447415 Lon:-79.952951
P3:Lat:40.447201 Lon:-79.952861
P4:Lat:40.447293 Lon:-79.952458

- T1:lat: 40.447354Lon:-79.952730
- T2:lat:40.447355Lon:-79.952730

The picture on the left is a snapshot of Google Map, the centre building of the map is Information Science Building. Coordinates of four vertex points (p1 to p4) are captured and defined in location dictionary. System will generate a corresponding polygon based on vertex points. By giving coordinates of any point, system can decide whether it is inside the polygon or not.

Future Research:

In the future, we about to design and implement a practical application for p2p file sharing system based on location access control, which can be used during class, conference as a collaborative tool.