IS203 Software Engineering

Technical Documents

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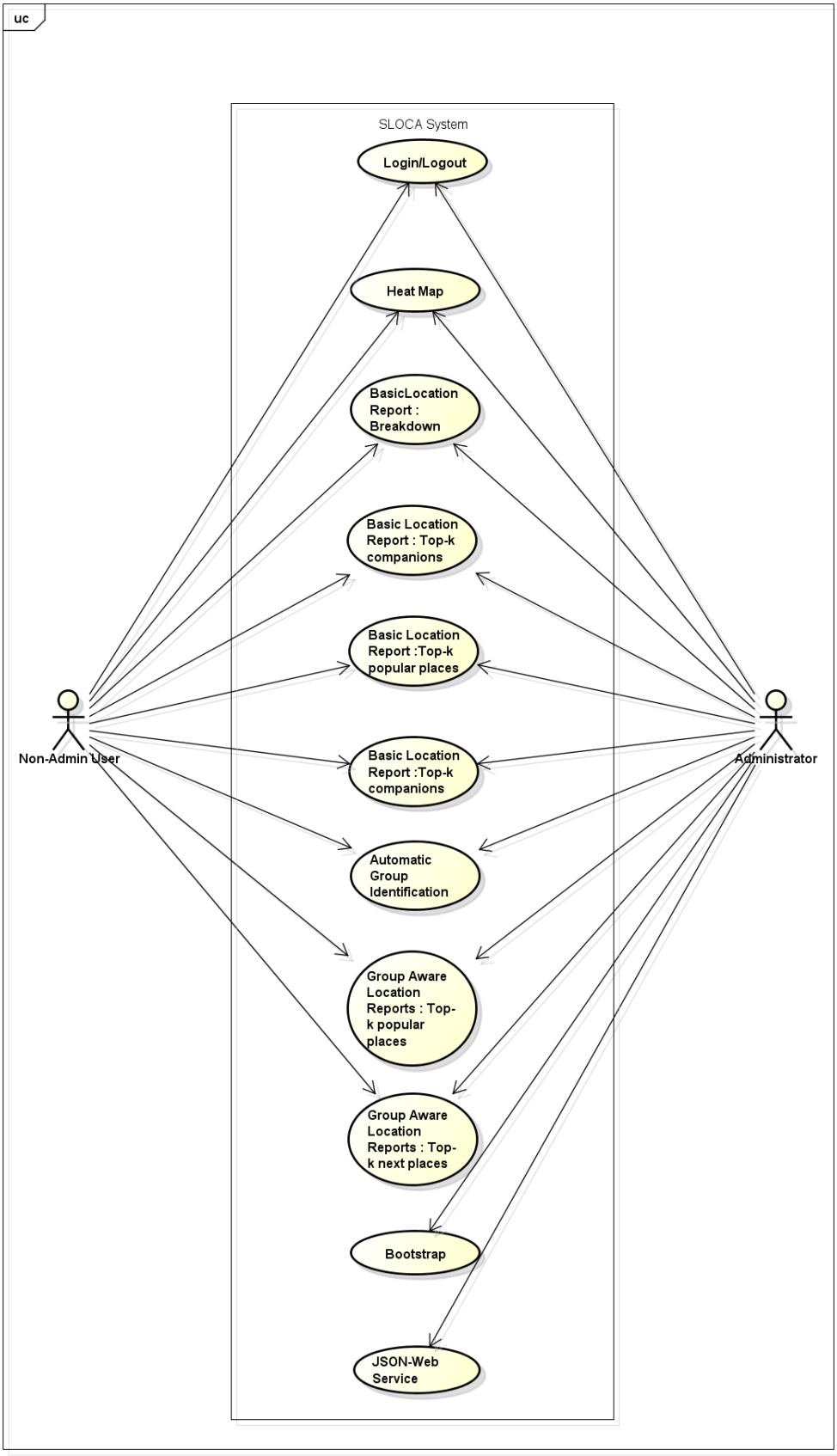
1. Analysis and Design

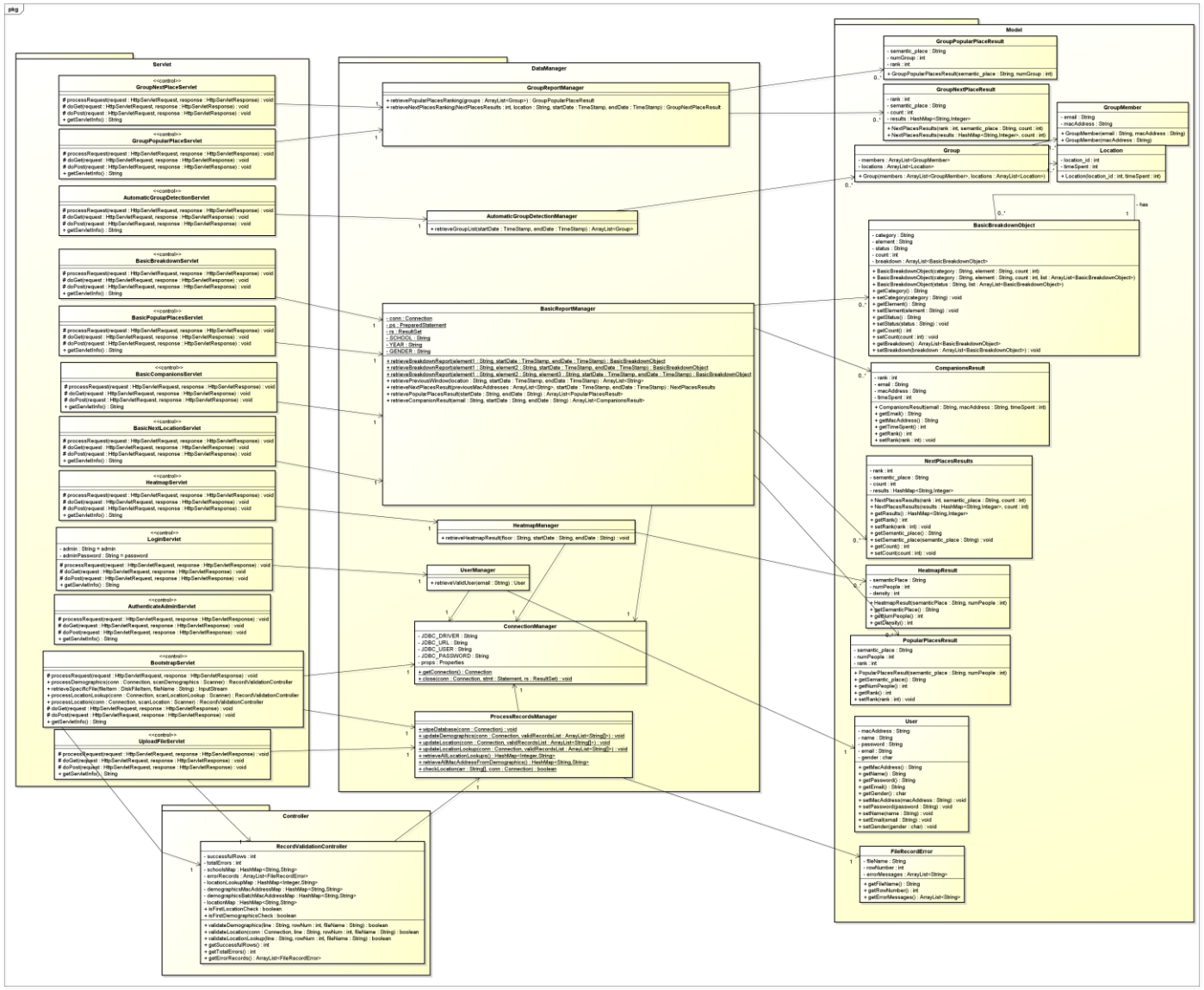
1.1 Use Case Diagram



1.2 Use Case Description

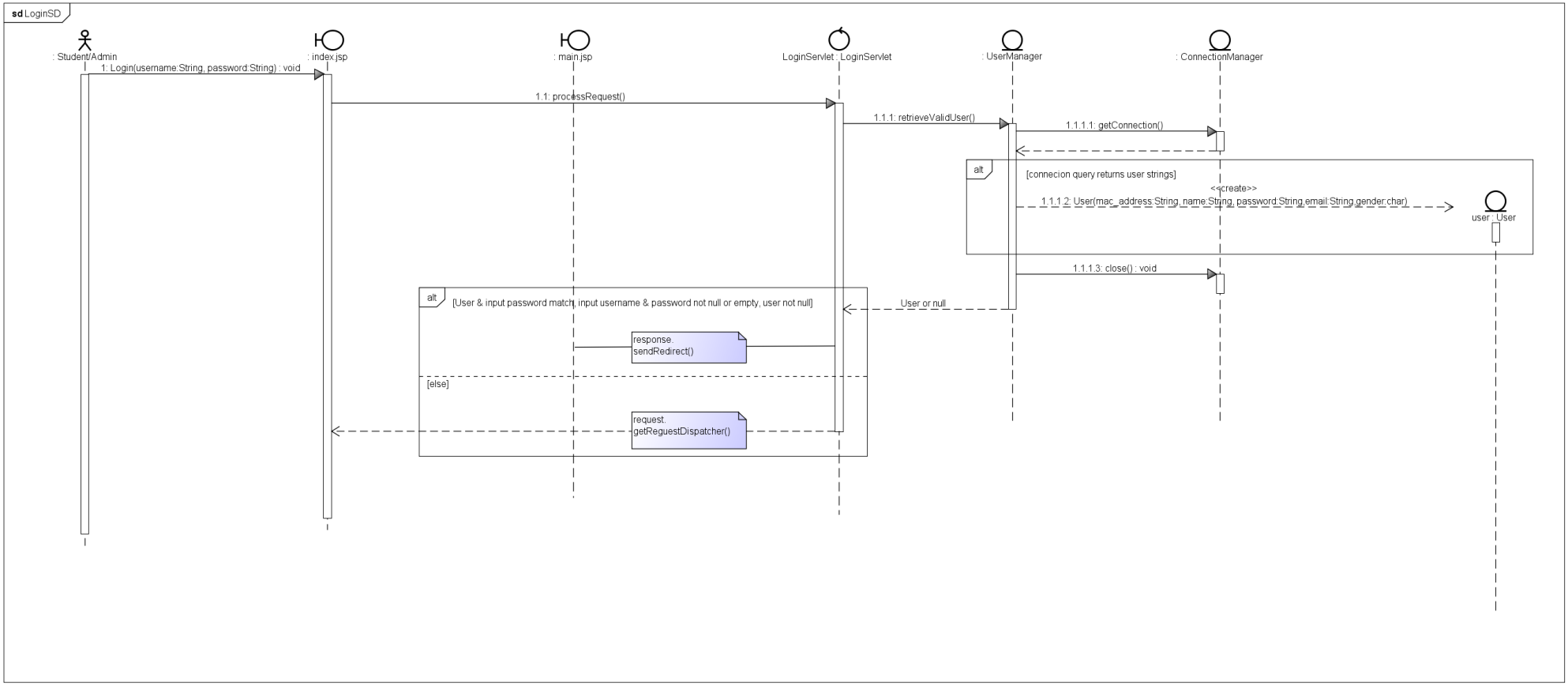
Use Case	Description
Login/Logout	This functionality allows (Admin and non-Admin) to be verified before logging in. Administrators who want to access the Admin Panel need further password verification. It also allows user to log out.
Bootstrap	This functionality allows an administrator to newly populate the database with additional location and demographics data.
Heatmap	A user is allowed to see the crowd density of any floor of the SIS building on any given day and time
Basic Location Report : Breakdown by Gender/Year/School	This functionality will allow a user to view the breakdown of students in SIS according to the gender, year and school on a given date and time
Basic Location Report : Top-k popular places	This functionality allows a user to view the top most popular places a user visits ordered by rank on a given date and time.
Basic Location Report : Top-k companions	This functionality allows the user to see who spent the most amount of time with a user at a specific date and time window ordered by rank.
Basic Location Report : Top-k next places	This functionality allows the user to see the most likely places that users at a particular location are likely to visit within the next 15 minutes, ordered by rank.
Automatic Group Identification	This functionality will discover potential groups in the SIS building at a given date/time based on users' location traces
Group Aware Location Reports : Top-k popular places	This functionality allows a user to view the top most popular places groups visit ordered by rank on a given date and time.
Group Aware Location Reports : Top-k next places	This functionality allows the user to see the most likely places that groups at a particular location are likely to visit within the next 15 minutes, ordered by rank.
JSON-Web Service	This functionality allows the primary functionalities to work through JSON API.

1.3 Class Diagram

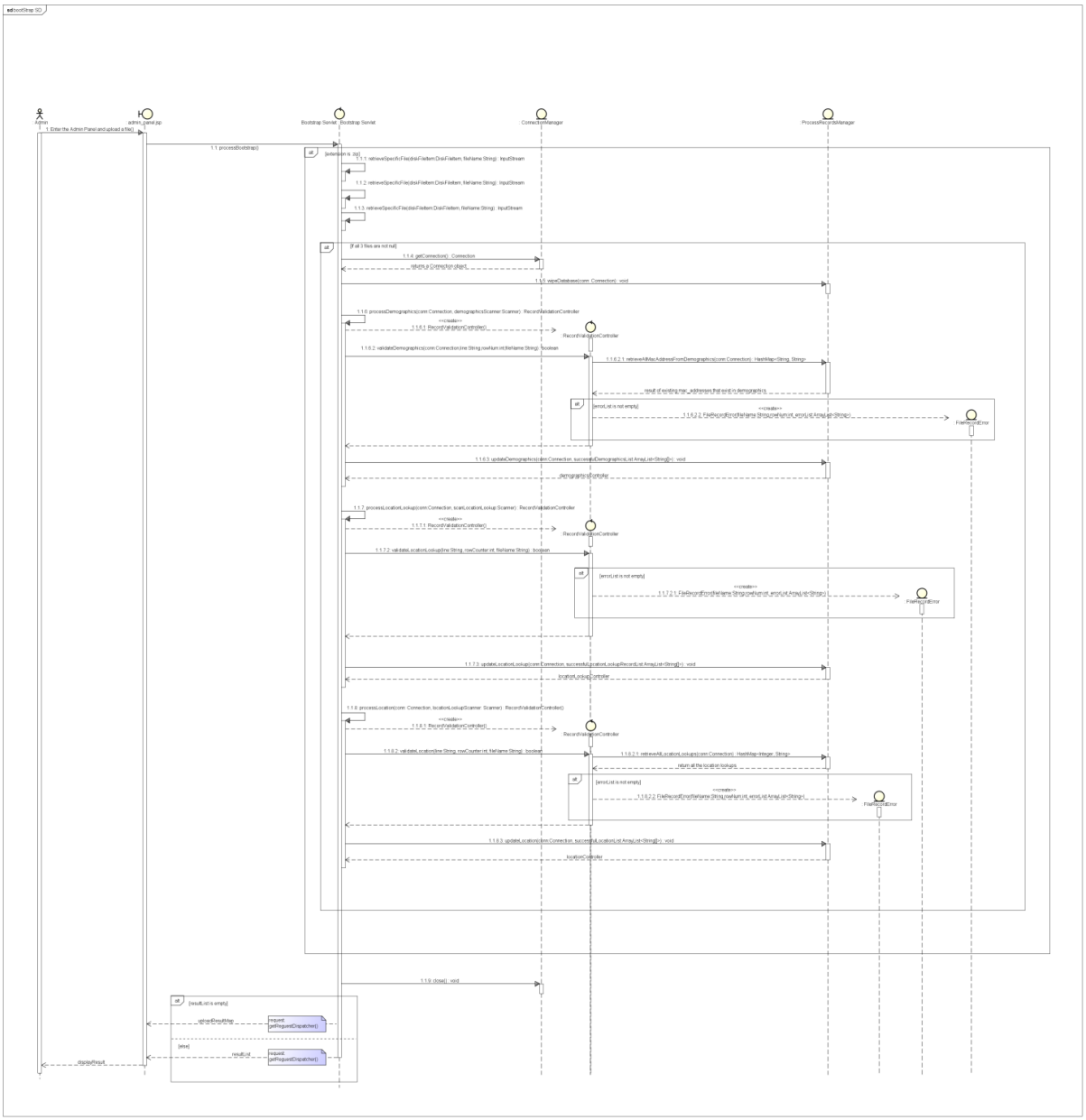


1.4 Sequence Diagrams

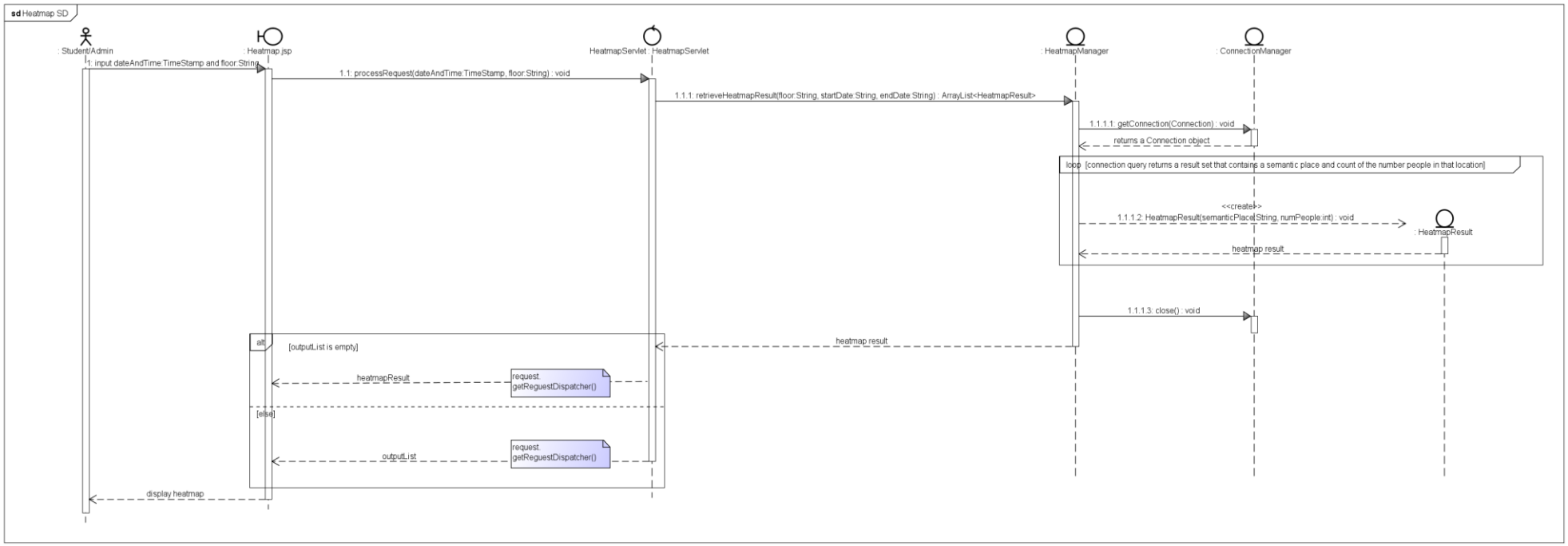
1.4.1 Login



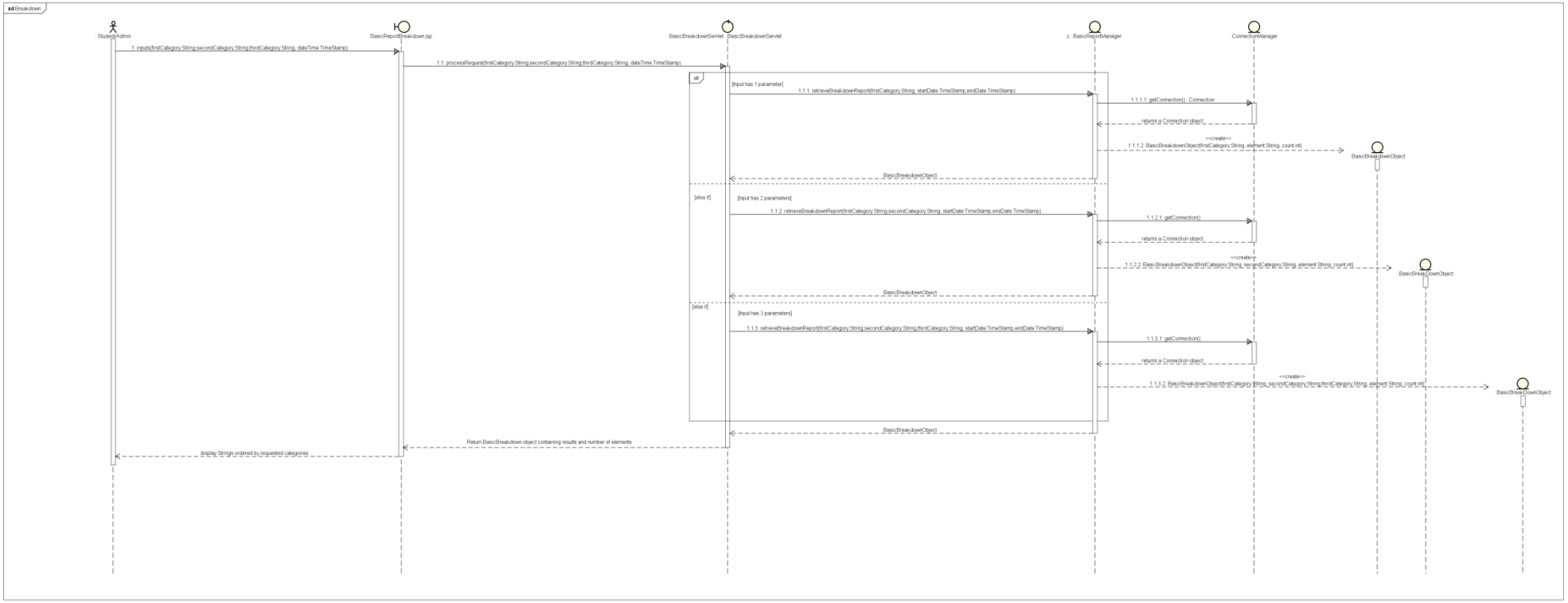
1.4.2 Bootstrap



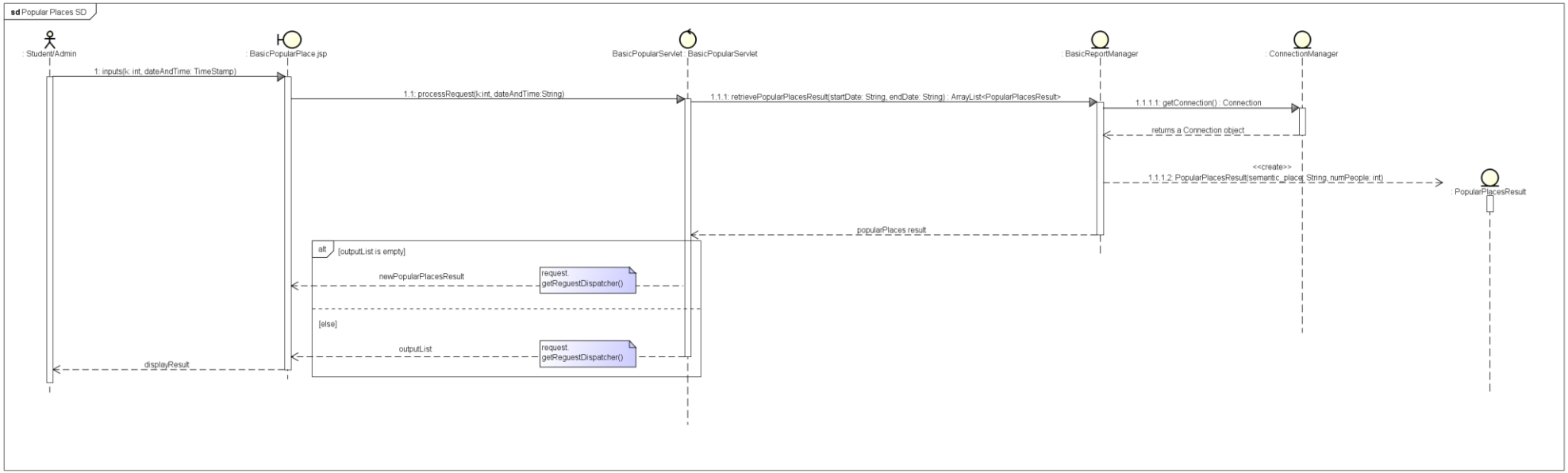
1.4.3 Heatmap


sd Heatmap SD
: Student/Admin
: Heatmap.jsp
HeatmapServlet : HeatmapServlet
: HeatmapManager
: ConnectionManager
1: input dateAndTime:TimeStamp and floor:String
1.1: processRequest(dateAndTime:TimeStamp, floor:String) : void
1.1.1: retrieveHeatmapResult(floor:String, startDate:String, endDate:String) : ArrayList<HeatmapResult>
1.1.1.1: getConnection(Connection) : void
returns a Connection object
loop [connection query returns a result set that contains a semantic place and count of the number people in that location]
<<create>>
1.1.1.2: HeatmapResult(semanticPlace:String, numPeople:int) : void
: HeatmapResult
heatmap result
1.1.1.3: close() : void
heatmap result
alt
[outputList is empty]
heatmapResult
request.
getReguestDispatcher()
[else]
outputList
request.
getReguestDispatcher()
display heatmap

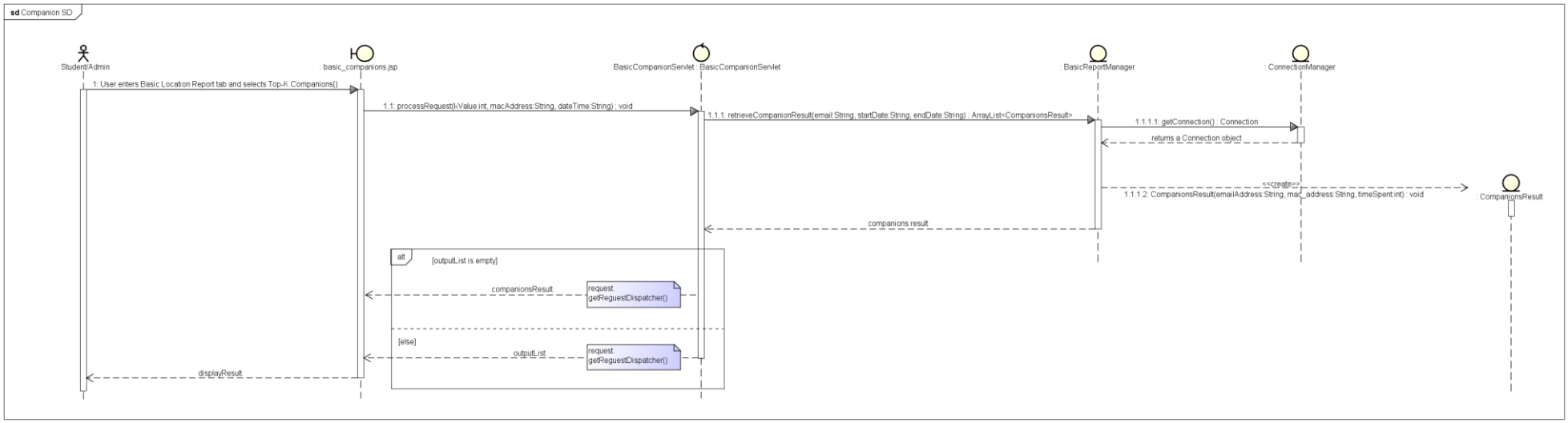
1.4.4 Basic Location Report: Breakdown by Gender/Year/School



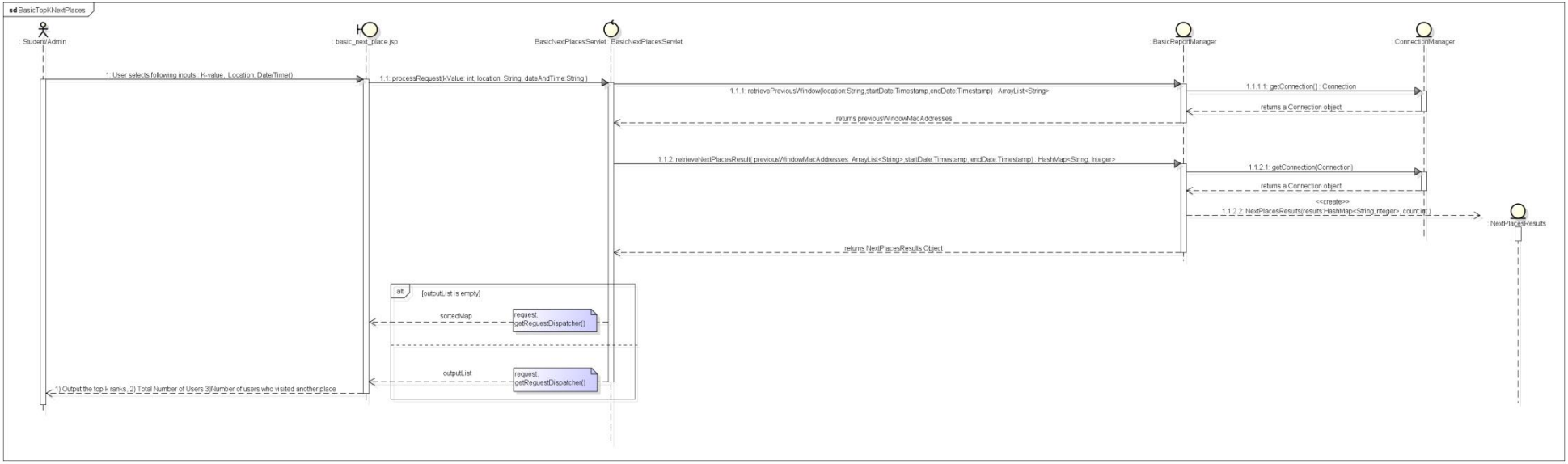
1.4.5 Basic Location Report: Top-k popular places



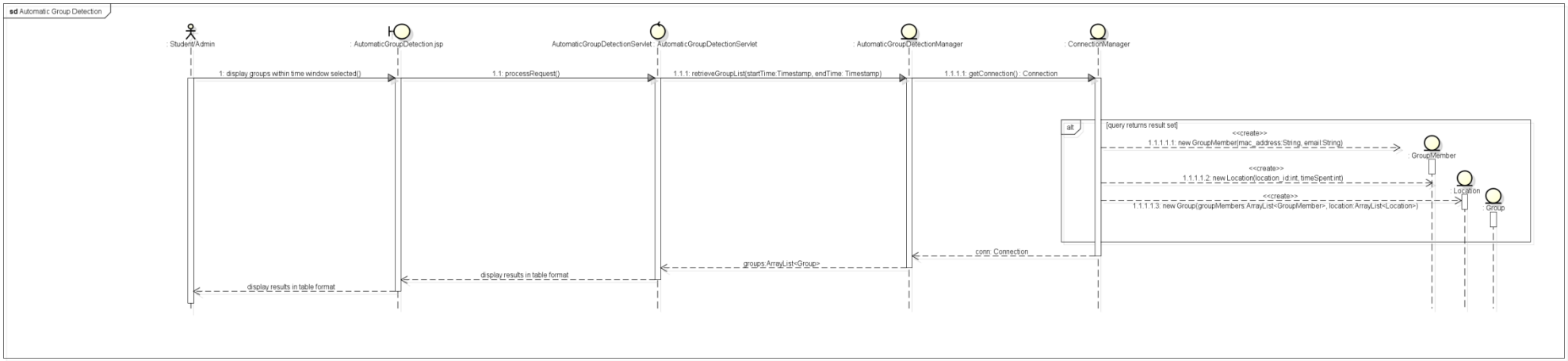
1.4.6 Basic Location Report: Top-k companions



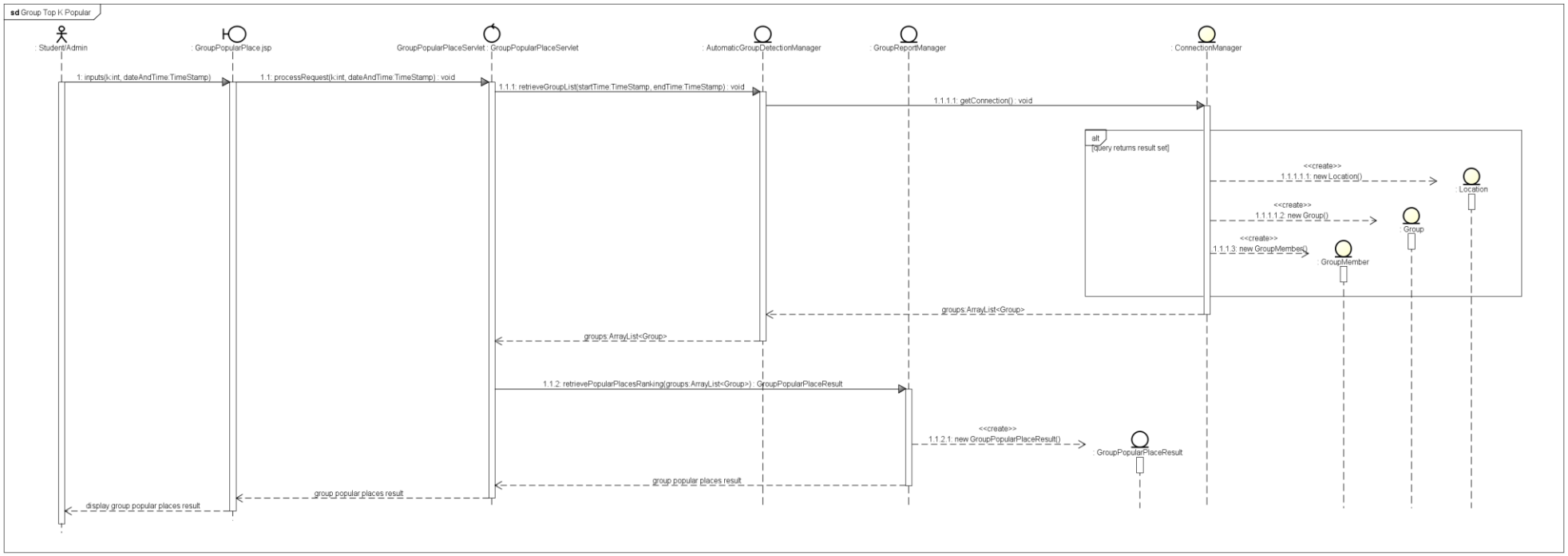
1.4.7 Basic Location Report: Top-k next places



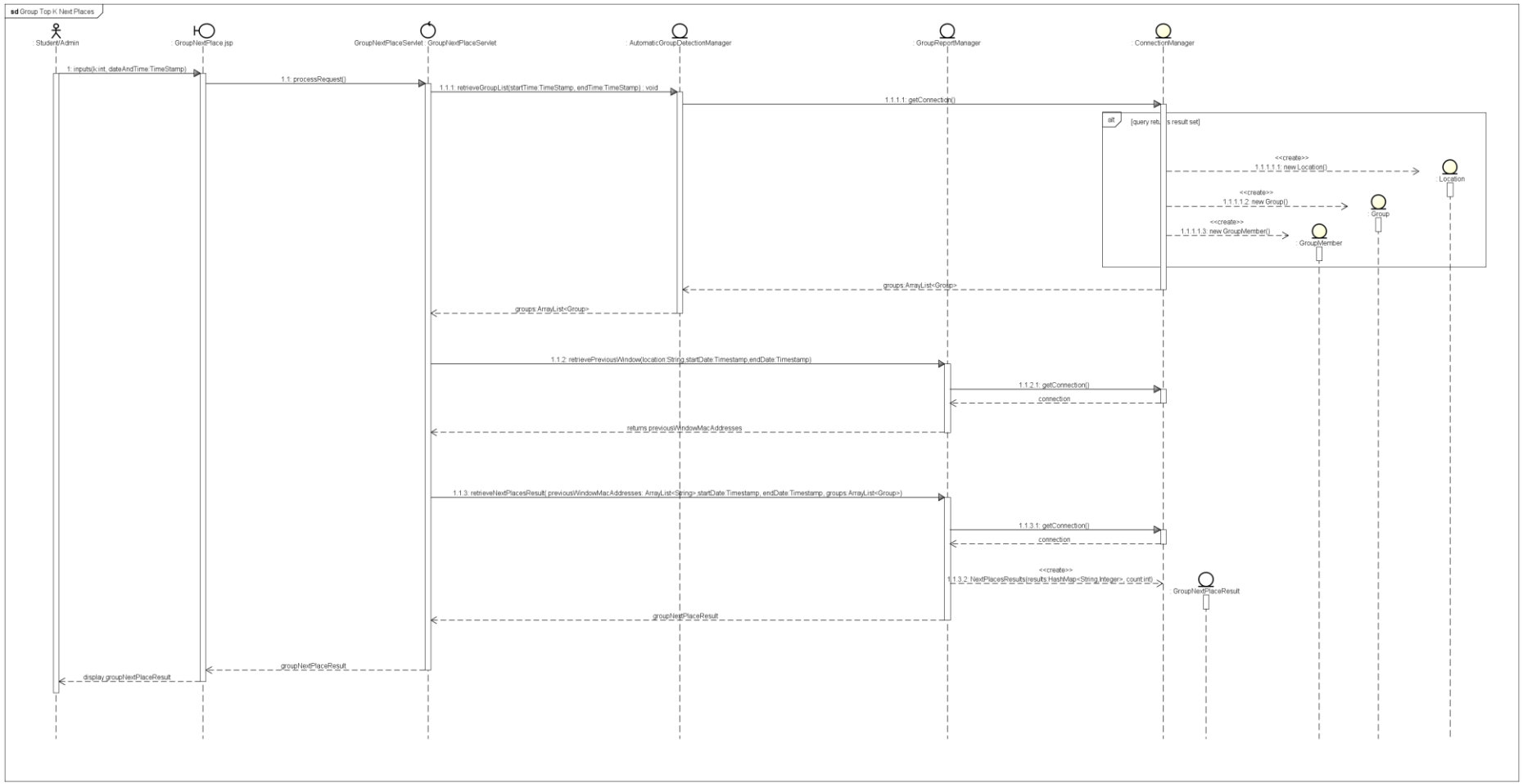
1.4.8 Automatic Group Identification



1.4.9 Group Aware Location Reports: Top-k popular places

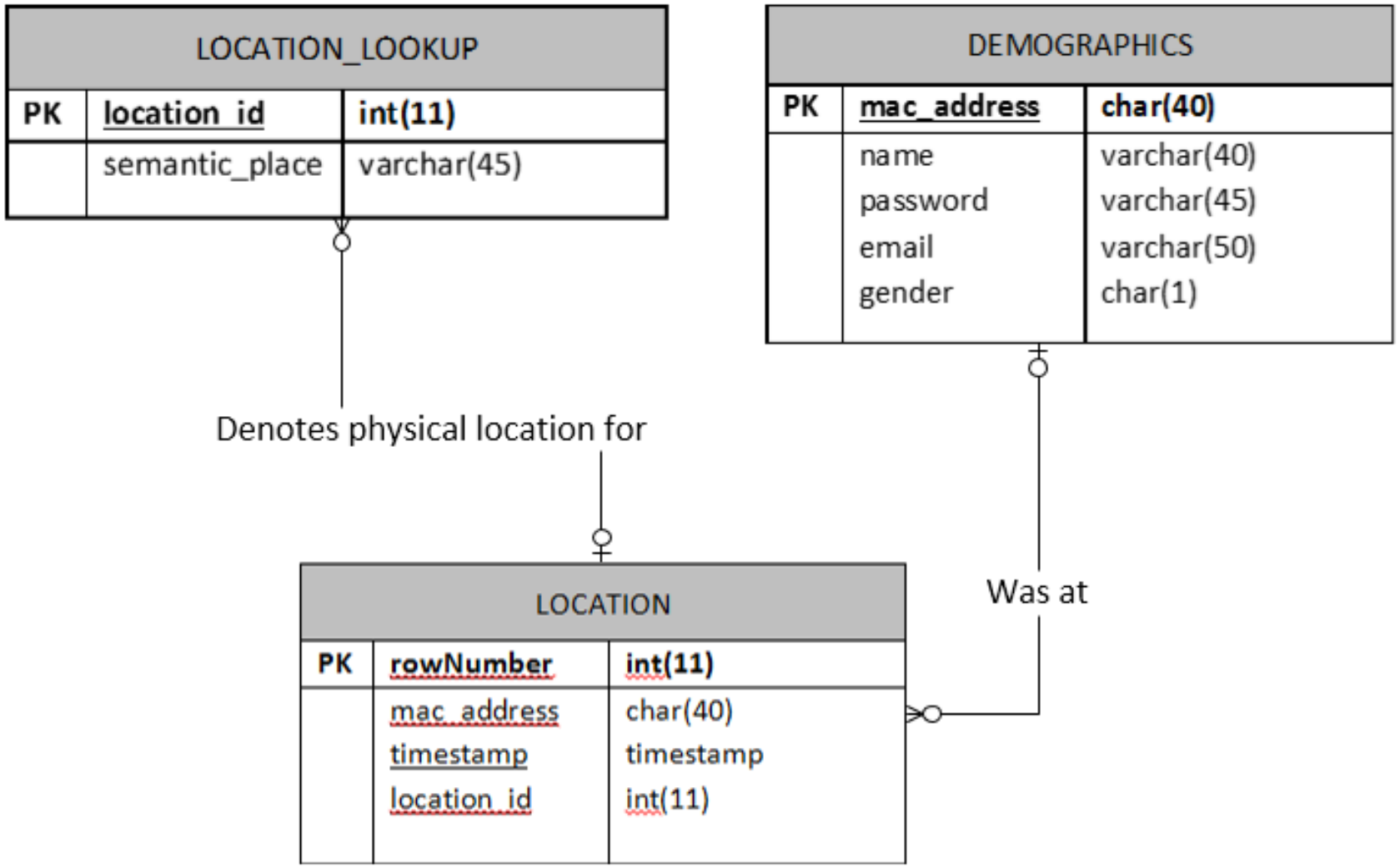
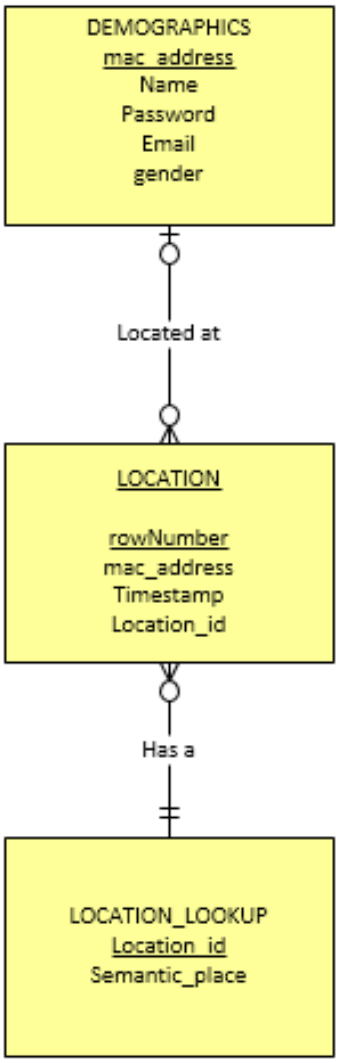


1.4.10 Group Aware Location Reports: Top-k next places



1.5 Database Design

1.5.1 Logical Diagram



1.5.2 ER Diagram