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### **RESEARCH ARTICLE**



# Design of Mobile Event Management and Broadcast System Using Rational Unified Process

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*Abstract— Now a days marketing and event management is one of the biggest challenge in advertisement industries. Media like television, newspaper, email, posters, etc. are some of the ways by which commercial products can be advertised effectively. There are specific kinds of advertisements which are dynamic in nature. These are considered as dynamic because their price, offer may change frequently based on the customer demand. These dynamic advertisements cannot be published effectively to end users using conventional mode. For fulfilling such requirements a new technique called Mobile Event Management is proposed in this paper. Mobile Event Management works on Bluetooth where customer will get dynamic advisements over mobile phones as soon customer enters the commercial place. In this paper we have used Ration Unified Process (RUP) and Unified Modeling Language (UML) to provide effective design framework for the proposed advertisement technique.*

*Keywords—Mobile Event, UML, RUP*

## I. INTRODUCTION

Nowadays, people in public spaces are constantly approached by a large amount of information like announcements, emails, posters, notices, news, etc. which people often do not pay enough attention because it is not in accordance with their interests, or it is not presented in the correct way or even because the content is not delivered using appropriate devices.

In earlier days to manage an event was very time consuming. Long meetings were conducted to plan the event and giving the event information to all the volunteers, organizer and participants. The drawback of existing system is that, they are very costly and time consuming. For example posters are placed on walls or polls which people often do not pay attention or the posters are covered by other posters, they are also affected by weather [1].

Email System is better than the posters but it has to follow some security aspects due to which large amount of emails are sent directly to spam. Images may take lot of time to load completely depending upon their resolution [5]. During this process user may not see entire image appearing in the email. To overcome such drawbacks, a new system called “*Mobile Event Management and Broadcasting System*” based on mobile phone advertisement is proposed in this paper.

Mobile Event Management and Broadcasting System can be used for advertising in large commercial areas. The event information such as venues, images, maps, schedules etc can be easily sent to hundreds of volunteers, organizers and participants within no time. This application finds its practical usage in places such as shopping malls, cinema halls, hospitals, etc.

The remainder of this paper will be as follows. Section 2 presents a brief review of related work. Section 3 provides detailed information about Rational unified Process (RUP). Section 4 presents the design of mobile event management and broadcast system. Section 5 shows the conclusion and Future Scope.

## II. RELEATED WORK

In earlier days to manage an event was very time consuming. Long meetings were conducted to plan the event and giving the event information to all the volunteers, organizer and participants was a tedious job [6]. To meet constraints of the existing system, companies hire advertising agencies to plan suitable advertising strategies. These agencies promote the companies' products and services through a variety of media like newspapers, billboards, radio, TV, direct mail, telemarketing, etc. Lately, emails and Internet advertisements have also become popular [5]. The agencies try to choose the means of advertising that would best reach the target audience and make the greatest possible impact within the budgetary constraints. Pervasive computing environments could provide a really powerful platform for these agencies to advertise their clients' products and services. Studies show that online advertising – banners on websites, popup ads, email offers and so on – is very effective and provides significant brand communication power [12],[13],[14].

From the above literature survey it is observed that advantageous comes along with disadvantages. For example email system is better than the posters but it has to follow some security aspects due to which large amount of emails are sent directly to spam. Moreover the user may not wait more than few seconds to till the image gets displayed completely. There is possibility that user may directly delete the messages without reading [5]. Moreover, Short Messaging Service (SMS) is also not likely to be effective because due to human tendency that SMS is not read if it is not of their interest [2].

Advertising on mobile devices is one of these new needs and has demonstrated to have a large potential due to the very personal and intimate nature of the devices and the possibility of reaching a broad range of targets [3]. To overcome above said drawbacks a brief idea of "Mobile Event Management and Broadcast System" is presented. In the proposed system the important system components are: Number of Access Points, Central Server and Database. The major goal of this research article is to use RUP for designing the proposed system.

## III. RATIONAL UNIFIED PROCESS (RUP)

The Rational Unified Process is a software development Process which shows how we can obtain software system from user requirements by describing different set of activities. Moreover Rational Unified Process is not a single process; it is considered to be a generic process framework that can be used for a large class of software systems, and over variety of application areas, organizations, competence levels, and project sizes [11].

The Rational Unified Process can be used as a guide for how to effectively use the Unified Modeling Language (UML). The UML is an industry-standard, used to show communication between architectures and designs. The UML was originally created by Rational Software, and is now maintained by the standards organization Object Management Group (OMG) [10]. The goal of this process is to produce high-quality software that meets the requirements of its end users within the budget and the given schedule [11].

Design and development of any software based on RUP includes four phases. The phases are: Inception Phase, Elaboration Phase, Construction Phase, and Transaction Phase [9, 11]. Each phase of RUP consists of one or more iterations. Each iteration follows a waterfall pattern containing requirement elicitation, analysis, design, implementation, test, and deployment [7, 8]. This may lead to an executable product, which grows incrementally from iteration to iteration to become the final system [7], [11].

## IV. DESIGN OF MOBILE EVENT MANAGEMENT AND BROADCAST SYSTEM BASED ON RUP

In this section a detailed design model has been provided based on RUP and UML diagrams. Design phase includes elaborated design aspects such as, Use case diagrams, Class diagrams, Sequence diagrams, Collaboration diagrams. A major and sincere effort has been put up to build and design the UML diagrams. StartUML [15], a popular open source UML modeling tool, is used to design the proposed system.

### A. Use Case Diagram

A UML use-case diagram is used to represent the interaction between system use cases and actors. There are two type of actors are represented in Figure 1. *Admin* and *novice user* (e.g. volunteer, organizers or invitees).Description of important use-cases is mentioned in Table. 1 to 3.

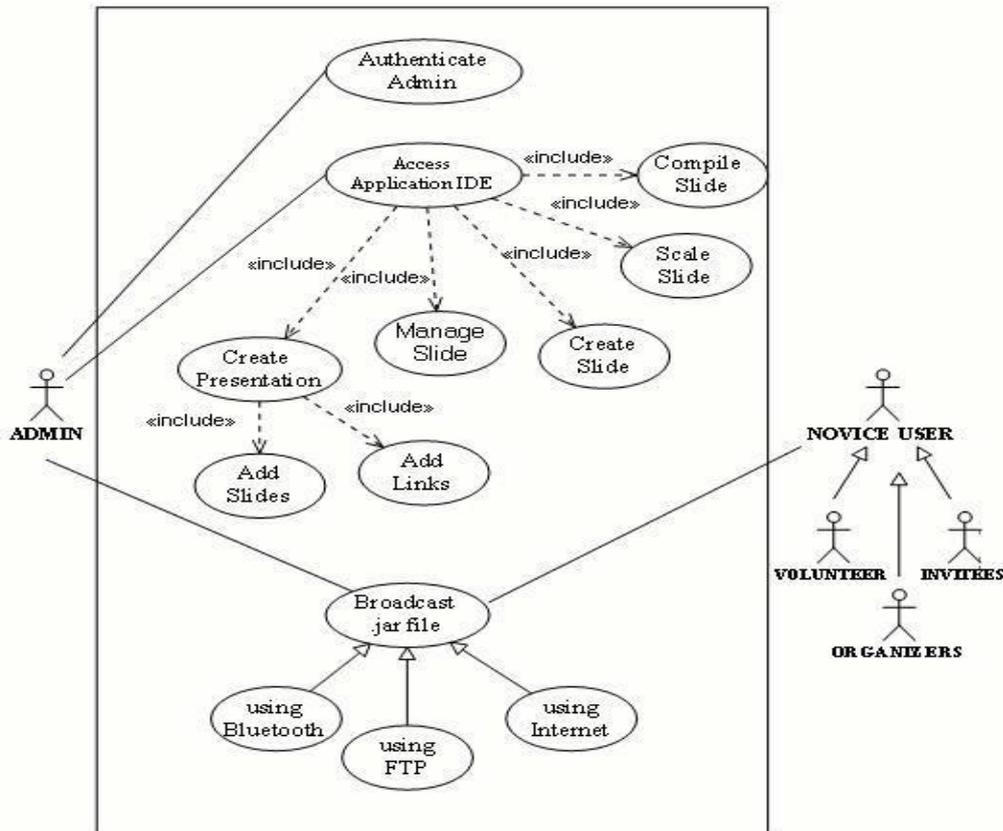


Figure.1. Use case diagram

TABLE I. AUTHENTICATE ADMIN USECASE

Use case ID	UC1
Use case name	Authenticate admin
Description	Admin authentication is done
Pre conditions	Enter correct username ,password
Standard flow	Login to ApplicationIDE
Post conditions	Successfully login
Open issues	If incorrect password, username login fails

TABLE II. ACCESS APPLICATIONIDE USECASE

Use case ID	UC2
Use case name	Access ApplicationIDE
Description	<p>1. Admin can do work like <i>Creates Slides, Scale Slides, Manages Slides</i> and <i>manages the slides, Create Presentation, Compile Slide.</i></p> <p>1.<i>Create Presentation</i> usecase also includes use cases like <i>Add Slide, Add Links</i> .</p>

Pre conditions	Successful login
Standard flow	1. Ads Creation 2. Ads Management
Post conditions	1. User Interface Page Showing. 2. Admin Operations.
Open issues	Unauthenticated access

TABLE III. BROADCAST .JAR FILE USECASE

Use case ID	UC3
Use case name	Broadcast .jar file
Description	For Broadcasting of Ads Users Bluetooths must be Switch On.
Pre conditions	UC 2 must have been done
Standard flow	1. Inquiry of devices in bluetooth range. 2. Through Bluetooth Broadcast ads to multiple users
Post conditions	Successfully broadcasting.
Open issues	Unsuccessfully delivery of Ads

**B. Class Diagram**

A class diagram shows the set of classes in our system and their relationships.

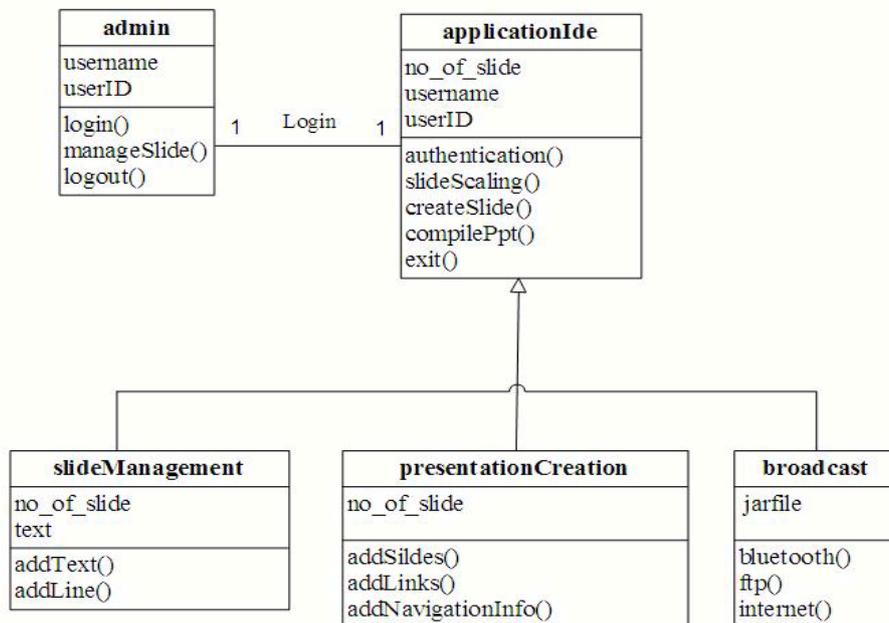


Figure 2. Class diagram

Figure 2 shows the class diagram of the proposed application. There are two main classes: *Admin* and *ApplicationIDE*. In between these two classes there is an *association* relationship with *1:1* multiplicity, because only one *Admin* class have access allows to *ApplicationIDE* class. In *admin* class there are two attributes: *username* and *useID*. Operations of *Admin* class are: *Login( )*, *Manage slide( )* and *Logout ( )*.

*ApplicationIDE*: This class represents actual system work and Attributes of this class are: *no\_of\_Slide*, *username* and *useID*. Operations of class *ApplicationIDE* are: *authentication()*, *SlideScaling()*, *CreateSlides()* and *compile\_ppt()*. There are Three Subclasses of class *ApplicationIDE* are represented by *Generalization* relationship.

C. Sequence Diagram

Sequence diagrams are used to show the work flow and the messages exchanged among the system objects or system elements.

Figure 3 shows the sequence of event in the Mobile Event Management. These sequence of events are like,

1. Object *Admin* can send *login()* message to the object *i:ApplicationIDE*.
2. Object *i:ApplicationIDE* can checking authentication of admin itself and returns the authentication message. *SlideScaling()* and *CreateSlide()* operations are performing the object *i:ApplicationIDE* itself, this is represented by self loop.
3. Object *i:ApplicationIDE* sends message to object *s:SlideManagement* to perform operations like, *addText()* and *addLines()*. After that work of that object is finish so we are representing a Cross sign at the end of this object's lifeline.
4. Now object *i:applicationIDE* send message to object *p:presentation* to perform operations like, *addSlides()*, *addLinks()* and *add Navigation Information()*. After performing these operation lifeline of this object is completed.
5. Object *a:admin* can send message to object *i:applicationIDE* the *manageSlide()* and object itself is performs the operation such as *create\_Presentation()*.
6. After presentation creation the object *i:applicationIDE* can send message to object *b:broadcast* to receive the ads through Bluetooth, FTP or Internet.
7. Finally object *Admin* can send *logout()* message to *a:ApplicationIDE* and it returns the *logoutMsg* back to the *a:admin* represented by dotted line. After logout our system is closed and ends its working.

Fig 4 represents how *Admin* and *System* communication turns to be successful by creating, adding slide and compiling. Fig 5 depicts how *Login* can turn to failure. Fig 6 represents how *Admin* does successful *Login* by verifying the username and password.

Fig 7 shows the sequence diagram of how *Admin* and *System* communication turns to be failure if there are errors in the program during compilation. Fig 8 represents the communication between *Admin* and *Customer* through Broadcasting of advertisements via Bluetooth in which the *System* executes the program and then broadcast the ads. Fig 9 represents failure of *Broadcasting* in which the advertisements are not delivered to the customer

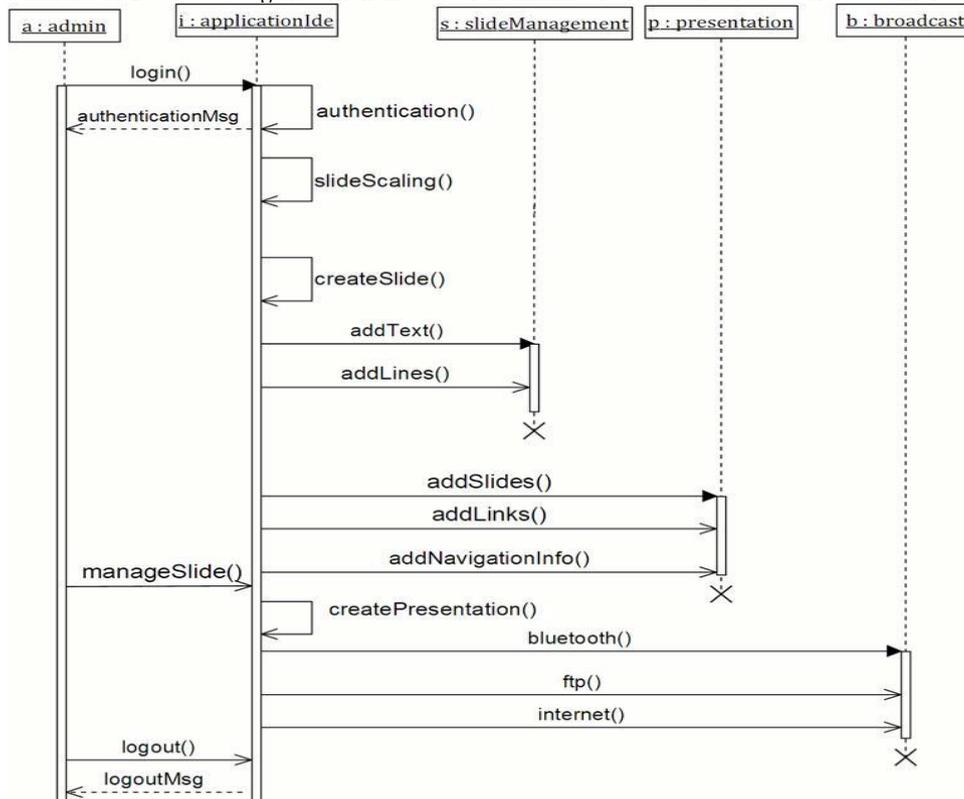


Figure 3. Sequence diagram

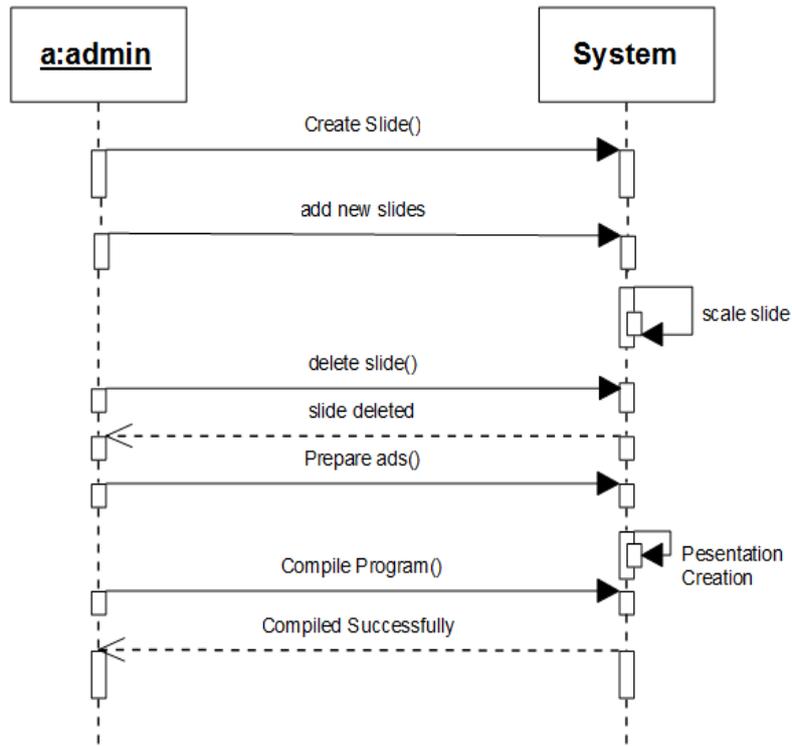


Figure 4. Sequence diagram –ApplicationIDE ( success)

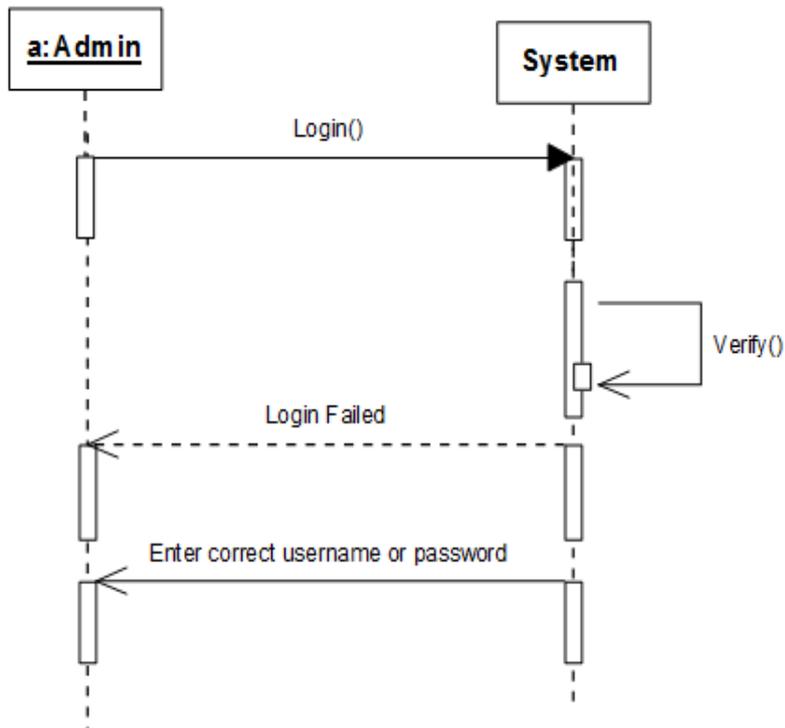


Figure 5. Sequence diagram for - login (failure)

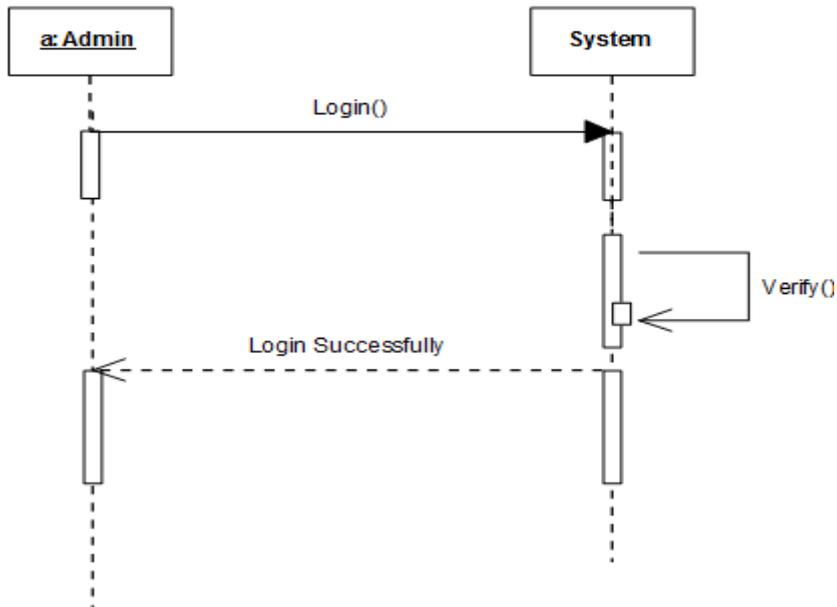


Figure 6. Sequence diagram-login (success)

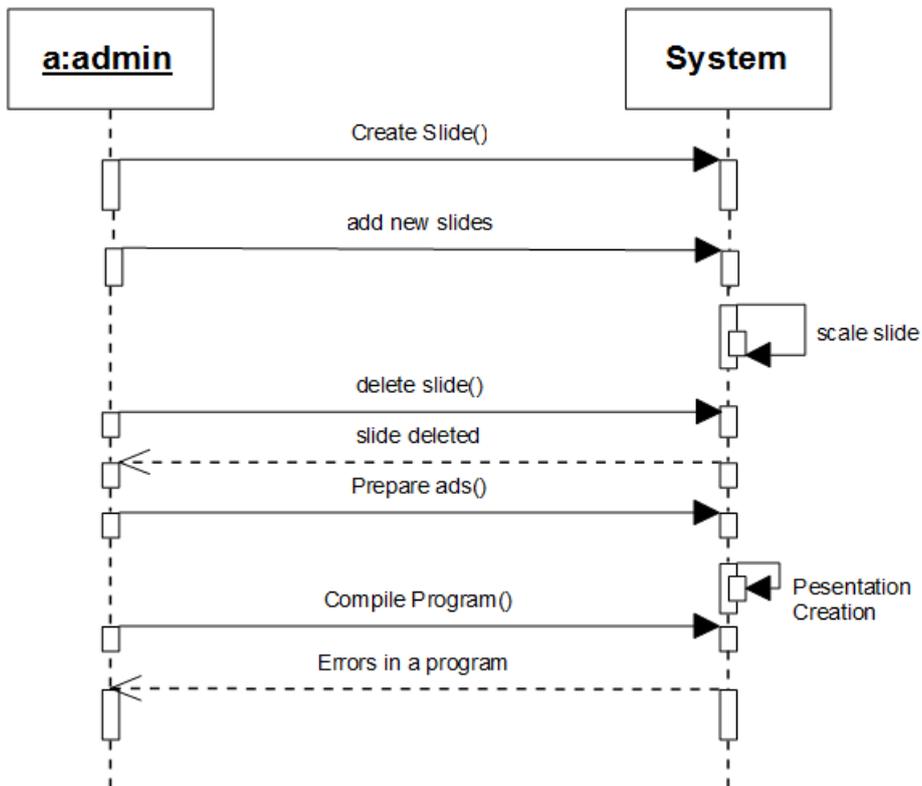


Figure 7. Sequence diagram for - applicationIDE (failure)

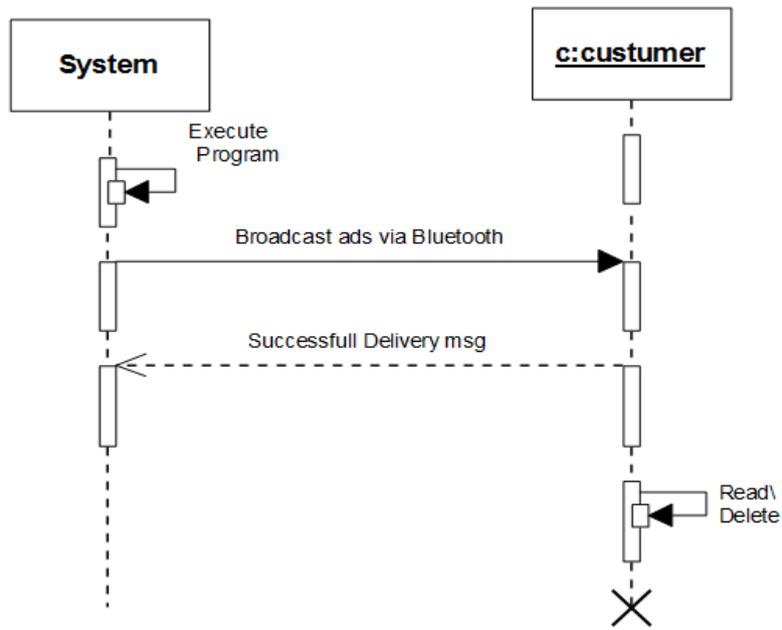


Figure 8. Sequence diagram for - Broadcasting (success)

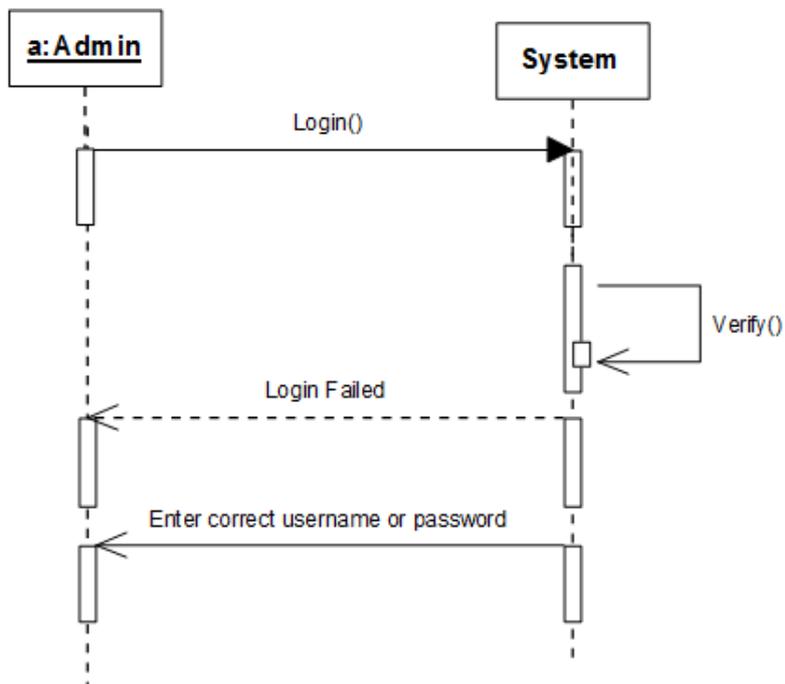


Figure 9. Sequence diagram for - broadcasting (Failure).

**D. Collaboration Diagram**

A collaboration diagram is a type of interaction diagram that show the structural organization of the objects and classes in Application there Communicates.

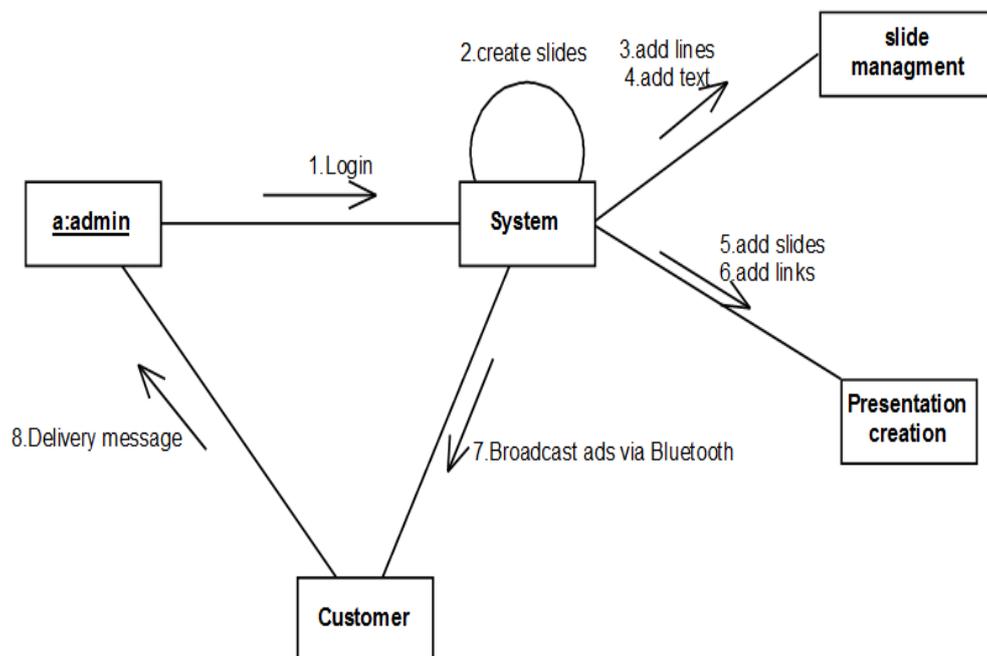


Figure 10. Collaboration diagram

Figure 10 shows the communication among the classes and objects.

1. Firstly object *a:Admin* and class *System* communicate each other by sending message `login()`.
2. Class *System* communicates with class *Slide Management* by sending messages like, *add lines* and *add text*.
3. Class *System* also communicates with class *Presentation Creation* by sending messages like, *add slides*, and *add links*.
4. Classes *Customer*, *System* and Object *a:admin* also communicates with each other.
5. In this collaboration diagram sequence of events are not necessary.

## V. CONCLUSION AND FUTURE SCOPE

Mobile Event Management and Broadcast System is effective way of publishing advertisements which change frequently. In this paper Rational Unified Process and Unified Modeling Language are effectively used for designing the proposed system. This paper describes use-case diagrams, class diagrams, and sequence diagrams for Mobile Event Management and Broadcast System. In the near future the proposed design model will implemented successfully and deployed at any of commercial venues.

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